# Textile Industries

COTTON
*Textile Industries*

## *Centrispray* air conditioning systems

**The Bahnson Centrispray System is based on the first really new idea in air washer design in almost fifty years.**

By combining time tested and proven components with advanced engineering, Bahnson has developed a system which has been quickly accepted by the Textile Industry.

Centrispray Air Washer Systems have recently been selected by the following mills:

Borden Mills, Inc., Kingsport, Tenn.
28 washers, 1,111,200 cfm,
1770 tons refrigeration

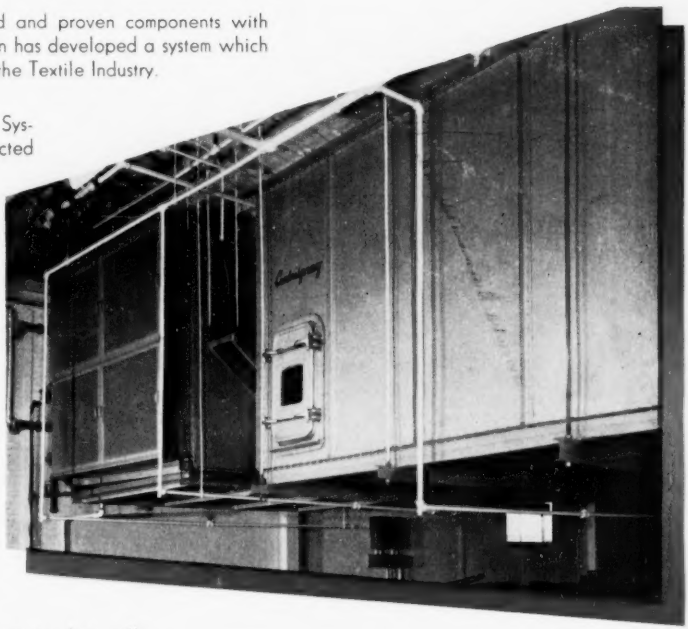
Erwin Mills, Inc., Erwin, N. C.
8 washers, 308,000 cfm

Orr Mills, Lyons Division, Synthetics,
Anderson, South Carolina
8 washers, 283,390 cfm,
371 tons refrigeration

P. H. Hanes Knitting Company,
Hanes, North Carolina
6 washers, 240,000 cfm

Statesville Division, The Seminole
Mills, Statesville, North Carolina
10 washers, 186,000 cfm

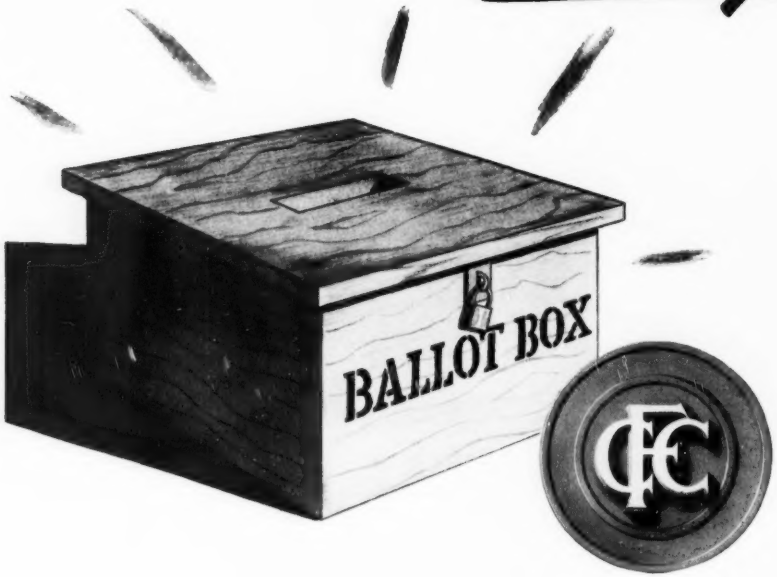
American and Efird Mills, Inc.,
Whitnel, North Carolina
4 washers, 160,000 cfm



Many other systems, in outstanding mills, prove that the Centrispray is a new leader in air conditioning for industry. The Centrispray washer is light in weight and can be installed in new or existing mills—often without need for apparatus houses. It is designed to require a minimum of maintenance and to provide a flexibility of operation and control that cannot be equalled with conventional systems. If you want all of the advantages of truly modern air conditioning, investigate the Centrispray Air Washer —for unit or central station systems, with or without refrigeration.

ENGINEERS AND MANUFACTURERS

# choose wisely!




## *There's a lot more to factoring than money!*

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T. HOLT HAYWOOD, WINSTON-SALEM, NORTH CAROLINA


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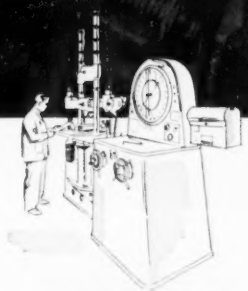
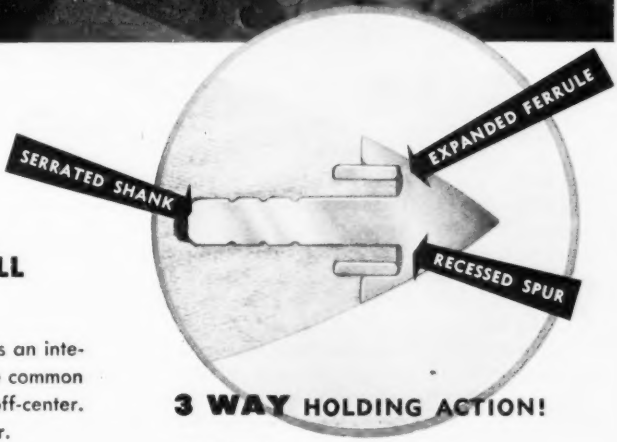
Volume 116 Number 10

# 50% GREATER HOLDING POWER

# NEW DRAPER RECESSED SPUR*

# NO EXTRA CHARGE.






**PROVEN IN LABORATORY and MILL**

The Draper Recessed Spur becomes an integral part of the shuttle and resists the common tendency to loosen, revolve, or move off-center. Supplied with or without fibre washer.

**3 WAY HOLDING ACTION!**

*PATENTED

**DRAPER CORPORATION**

ATLANTA, GA. HOPEDALE, MASS. SPARTANBURG, S. C.

THE WORLD'S LARGEST MANUFACTURER OF AUTOMATIC LOOMS

# ...FOR HIGHER QUALITY, LOWER COSTS

Yarn quality goes up when you lubricate spindles with *Texaco Spindura Oil*. This outstanding lubricant won't thicken or gum up. It keeps spindles cushioned against vibration, eliminates hunting and lagging and thus reduces chafing and unevenness.

Production goes up also. Free-flowing *Texaco Spindura Oil* gives better protection. Thus, you can operate frames at full speed with heavy packages. You'll have fewer ends down, too.

*Texaco Spindura Oil* reduces spinning costs because it 1) reduces spoilage — *Texaco Spindura Oil* won't atomize and fog-damage yarn on adjacent spindles; 2) reduces power consumption — minimizes frictional drag on start-ups and runs; and 3) reduces lubrication and maintenance expense.

In high-speed, grease-lubricated, anti-friction bearings use *Texaco Regal Starfak*. It gives longer lasting protection, reduces maintenance costs. For effective fibre conditioning, use *Texaco Texspray Compound*. You'll get more long staple, more uniform count.

Let a Texaco Lubrication Engineer help you step up output and quality and reduce your costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, New York.

## TEXACO Lubricants
### FOR THE TEXTILE INDUSTRY

*Faithfully yours* 50 *for Fifty Years*

**TUNE IN:** Tuesday nights on television—the TEXACO STAR THEATER starring MILTON BERLE. See newspaper for time and station.

Textile Industries
COTTON
Volume 116, Number 10
October, 1952

John C. Cook, *Bus. Mgr.*
John C. Fonville, *Editor*

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*Editorial and Executive Offices: 806 Peachtree St., N. E., Atlanta 5, Georgia*

For names and addresses of editorial and business representatives, see page 207

# New Pickers for Old

Your old pickers can be rebuilt exactly like new machines. The basic design of a picker has not changed in more than 50 years, and therefore a thoroughly modern picker can be built right into the old frames at a big saving in cost. The old frames are valuable, and are just as good as new ones.

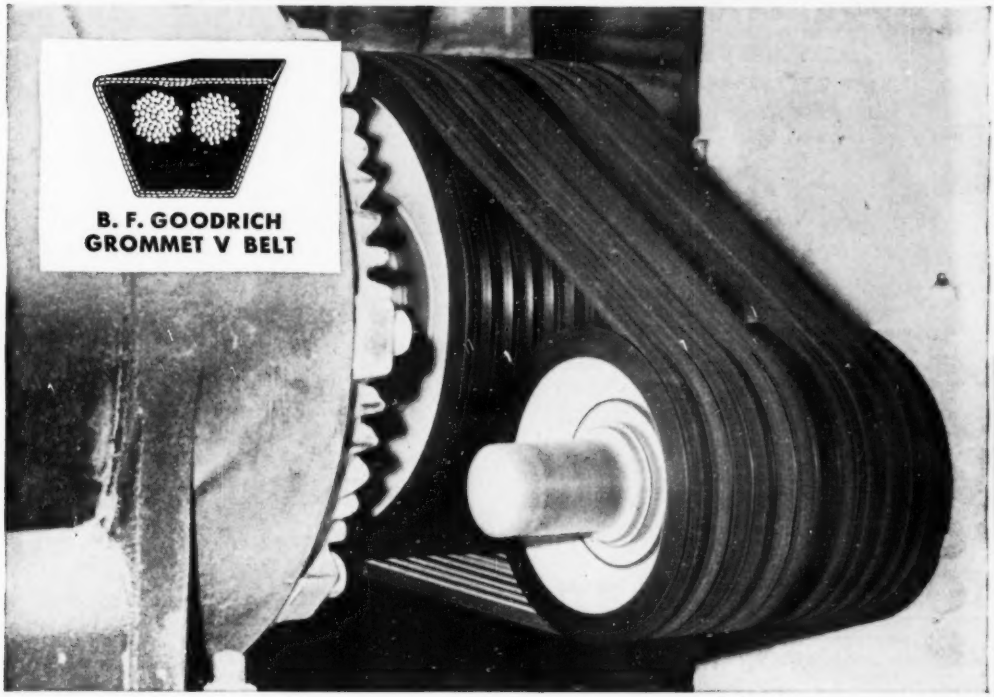
Where it is not feasible to send your pickers to us for rebuilding, we will exchange them for rebuilt pickers of the same model. Our truck delivers a new picker at your plant and takes away an old one. The new picker can be making laps the day after it is delivered.

Where pickers do not need complete rebuilding, but should have a thorough overhauling, this work can be done right in your picker room with one of our skilled machinery erectors in charge of the work.

We keep a large stock of picker repair parts always on hand, and fill repair orders within 24 hours after their receipt. In an emergency, telephone us in the morning and you can have the picker repair parts at the mill the following day, if you are within about 500 miles of Greenwood.

**AldricH MachinE WorkS**
Greenwood, South Carolina

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER




# Where B.F.Goodrich grommet belts outlasted others 3 to 1

## *B. F. Goodrich grommet V belts cut costs 20 to 50%*

ORDINARY belts, previously used on this drive, couldn't stand the heavy load, couldn't take the strain of 24-hour-a-day service. There were frequent shutdowns for repairs. Belts were averaging only 3 months' life. Then B. F. Goodrich grommet V belts were installed. When the picture was taken, the grommet belts had already outlasted ordinary belts 3 to 1, maintenance costs had been cut nearly 100%, and the belts still looked good for a lot more service. Here's why:

***No cord ends***—A grommet is endless, made by winding heavy cord on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

***Concentrated cord strength***—All of the cord material in a B. F. Goodrich grommet belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. There are no layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced. And grommet V belts stretch less—only ⅓ as much, on an average, as ordinary V belts.

***Better grip, less slip***—Grommet V belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give ⅓ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

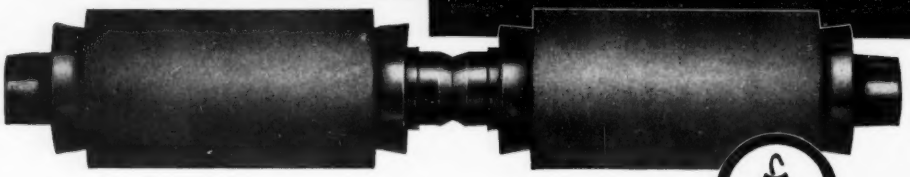
***They cost no more***—Grommet V belts cut costs because they last longer, increase production because machines keep running with fewer interruptions, reduce maintenance costs because they need less attention, yet they cost not one cent more. Available in C, D, and E sections. But remember, only B. F. Goodrich makes the grommet V belt (U. S. Patent No. 2,233,294), so to get all these savings, call in your local BFG distributor the next time you need V belts, or write *The B. F. Goodrich Company, Industrial & General Products Div., Akron, Ohio.* (Available in Canada)

*Grommet V-Belts* BY
**B.F.Goodrich**
FIRST IN RUBBER

# 18 WEIGH THESE PRACTICAL ADVANTAGES OF

SACO-LOWELL TORRINGTON

## S-L-T NEEDLE BEARING TOP ROLL



1. Lubrication needed only at time of annual frame overhaul.
2. Sealed-in lubricant eliminates lost time and production.
3. Roll picking practically eliminated, due to inherent cleanliness.
4. No yarn spoilage from black oil which generally follows routine roll picking.
5. Shells are interchangeable from one arbor to another.
6. Shell covering is interchangeable (leather or synthetic) at will.
7. Shells are readily detachable, so rolls can be recovered in the mill.
8. Assembly is fool-proof — cannot be assembled incorrectly on the arbor, or pushed beyond its proper position.
9. Dual needle bearing preserves shell alignment, eliminates "rock."
10. No wear whatsoever on saddle, cap bars and roll necks.

**S-L-T TOP ROLLS are standard equipment on the new**

SACO-LOWELL GWALTNEY SPINNING FRAME

11. No useless power consumption caused by saddle friction.
12. High capacity needle bearings assure long life, low maintenance cost.
13. Arbor heat treated for extra toughness, durability, wear resistance.
14. Labyrinth seal of simple design prevents entrance of fly and dirt.
15. Rugged in design, to withstand rough handling, dropping or abuse.
16. Rolls require no adjustment by mill personnel.
17. "Runout" minimized, through a high degree of concentricity.
18. Offered only after more than 10 years of intensive research.

**S-L-T TOP ROLLS in use have passed the *1,250,000* mark**

**S-L-T- TOP ROLLS are manufactured by THE TORRINGTON COMPANY, Torrington, Conn., and are available exclusively through**

# SACO-LOWELL

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Shops at BIDDEFORD, MAINE and SANFORD, N. C.

SALES OFFICES CHARLOTTE • GREENVILLE • ATLANTA

# TEXTILE BANKING COMPANY

Inc.

*Factoring Service*

Puts your sales on a cash basis
Strengthens your cash position
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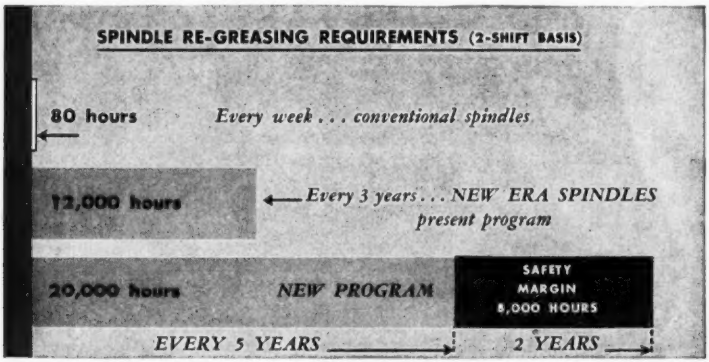
55 MADISON AVENUE • NEW YORK

# How many times have you oiled your conventional spindles since 1945?

New Departure engineers recently reported on a test made on **NEW ERA SPINDLES** that had been running for **seven years** in Chicopee Mills, Chicopee Falls, Mass., at 10,000 rpm, 16 hours per day, five days per week:

> Even after seven years of continuous service (on two shifts) without re-lubrication, a 100% noise test showed that 283 out of 284 bearings were in excellent condition.
>
> There is still enough grease remaining for further service without lubrication.
>
> It would appear that extending the re-greasing period to five years would be a safe procedure.

On the strength of this test and others still in progress, we expect soon to announce the extending of our former 3-year re-greasing recommendation to a 5-year re-greasing program . . . with a factor of safety of **two years beyond that!**


SPINDLE RE-GREASING REQUIREMENTS (2-SHIFT BASIS)
80 hours
Every week . . . conventional spindles
12,000 hours
Every 3 years . . . NEW ERA SPINDLES present program
20,000 hours
NEW PROGRAM
SAFETY MARGIN 8,000 HOURS
EVERY 5 YEARS
2 YEARS

On request, a Saco-Lowell engineer will be glad to make a study of the operation of your present spindles, and indicate the specific advantages of installing New Era Spindles.

# SACO-LOWELL

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# DULUX® High-Hiding Maintenance White Enamel

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- covers previously painted surfaces with 1 coat, brush or spray
- excellent adhesion on properly prepared wood, metal, concrete, brick, fiberboard or plaster
- extremely opaque
- excellent drying
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- exceptionally durable
- resists yellowing for years

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# for Quick, Thorough Removal

## OF FLY AND LINT

INSTANT CONNECTION AND DISCONNECTION BY HAND—WITH NO TOOLS REQUIRED.

# HANSEN

QUICK-CONNECTIVE

## COUPLINGS AND BLOW GUNS

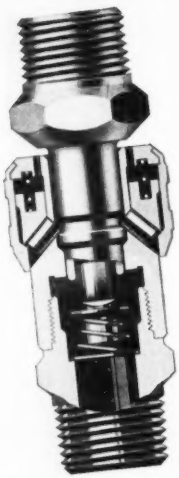
Socket
No. 5300

Hose Clamp Plug
No. 5-PP19

Hose Clamp
No. HC-2P19

Air Blow Gun
No. 25

10" Extension Nozzle
No. 26



● Lint and fly can be quickly removed from carding machines, spinning frames and looms through the use of Hansen quick-connective couplings and an Air Blow Gun.

By equipping conveniently located air stations with Hansen quick-connective couplings, it is a simple matter to move from station to station with a short hose and the Hansen Air Blow Gun.

To connect the air hose at any station, you merely push the coupling plug into the socket—air is instantly and automatically available at blow gun.

To disconnect, just push back sleeve on coupling socket—plug immediately releases and flow of air is shut off at station.

Change-over from air blow gun to solvent spray cleaner takes only a few seconds.

*Write for catalog and details.*

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*SINCE 1915*

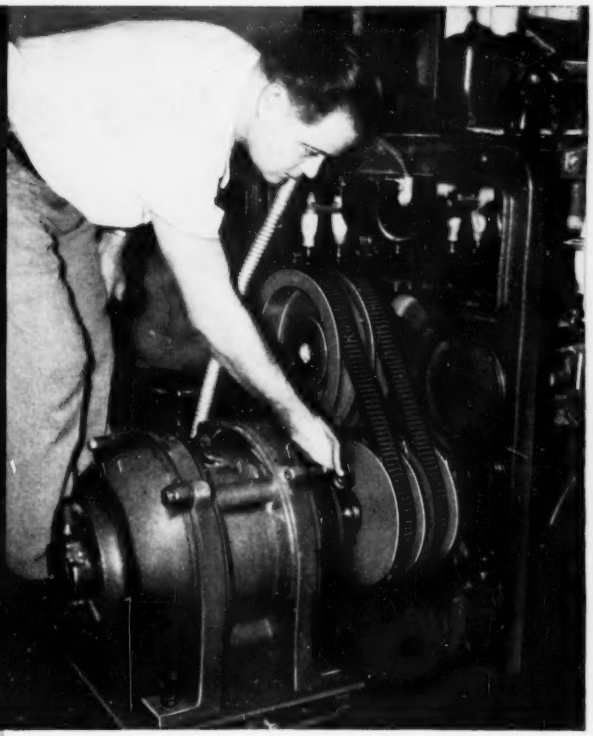
## THE HANSEN MANUFACTURING COMPANY

4031 WEST 150th STREET • CLEVELAND 11, OHIO

# NEW Spinning Frame Drive

CUTS DOWN-TIME ON SPEED CHANGES!

INCREASES PRODUCTION!



The variable sheave in this new drive locks as a unit when tightened on the shaft. It locks and unlocks easily, quickly, with the turn of a screw.

One-point adjustment establishes accurate pitch diameter; cylinder speeds are held within extremely close limits. Changes are made quickly, production is kept at maximum. In rare cases where a change in the companion sheave is required, the famous Dodge Taper-Lock principle makes the change quick and easy.

The slide motor base permits quick changes in center distances to preserve proper belt tension as the variable sheave is adjusted for changes in speed.

Latest design Sealed-Life Belts have deep sidewalls and lateral rigidity for efficient operation.

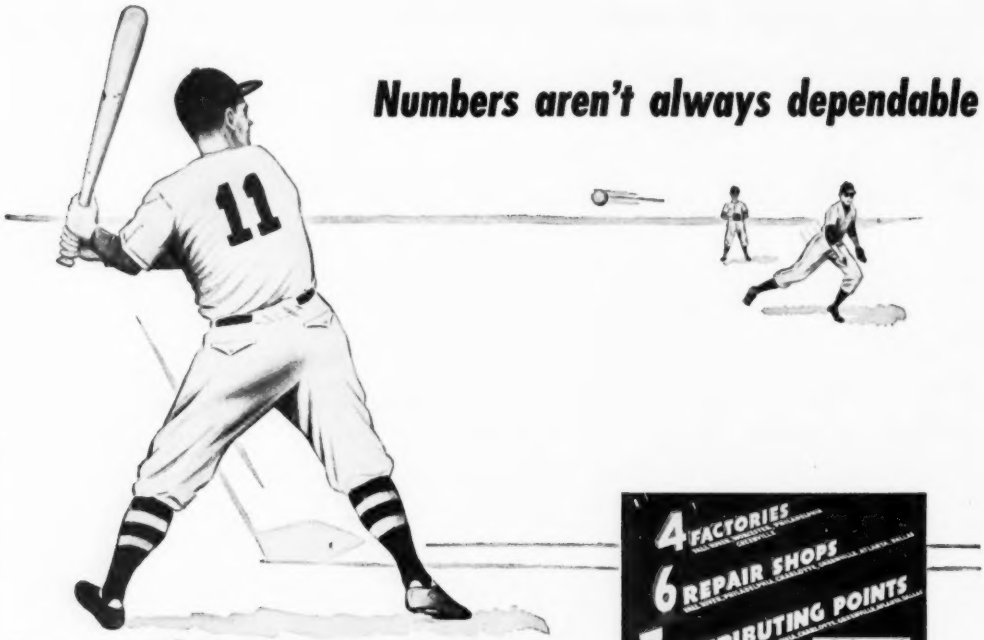
All components in this new Dodge Spinning Frame Drive are engineered to operate in perfect harmony, assuring a long life of dependable, trouble-free service. Write now for Bulletin A-618 with complete information.

**DODGE MANUFACTURING CORPORATION**
**3500 UNION STREET, MISHAWAKA, INDIANA**

**DODGE**
*of Mishawaka, Ind.*

Call the Transmissioneer, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new cost-saving methods. Look for his name under "Power Transmission Equipment" in your classified phone book.

# Numbers aren't always dependable




## but Ashworth's 4-6-7 Is...

**4** FACTORIES (Fall River, Worcester, Philadelphia, Greenville) assure you of an uninterrupted supply of card clothing. Decentralized and strategically located, these factories can "pinch hit" for each other in emergencies.

**6** REPAIR SHOPS (Fall River, Philadelphia, Charlotte, Greenville, Atlanta, Dallas (Textile Supply Co.) ) assure convenient, economical and prompt reclothing and repair service.

**7** DISTRIBUTING POINTS (Fall River, Worcester, Philadelphia, Charlotte, Greenville, Atlanta, Dallas (Textile Supply Co.) ) make Ashworth products and consultation service more readily available.

AND DON'T FORGET "90". More than 90 years of experience in cards and card clothing — your guide to a consistently high standard of quality in manufacture and efficiency in performance.

Buy Ashworth Card Clothing and get DEPENDABILITY.

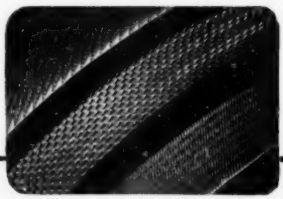
**ASHWORTH BROS., INC.**

*American Card Clothing Co. (Woolen Division)*

FALL RIVER • WORCESTER • PHILADELPHIA • CHARLOTTE • GREENVILLE
ATLANTA • DALLAS (Textile Supply Co.)

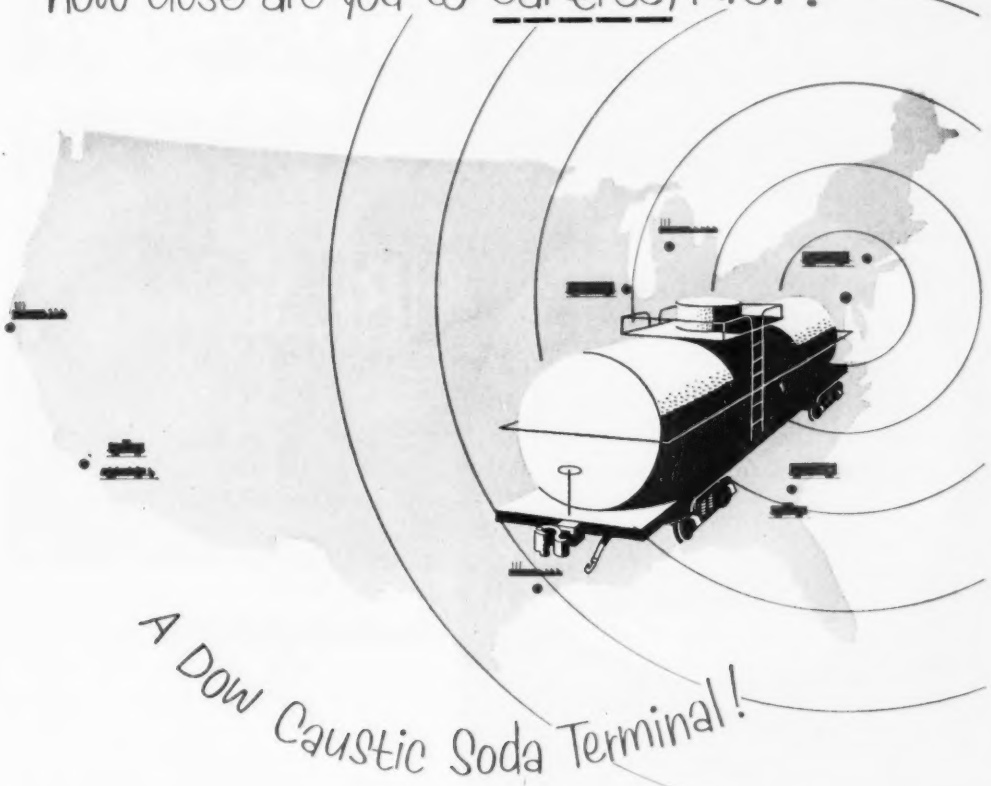
**PRODUCTS AND SERVICES**

. . . Card Clothing for cotton, wool, worsted, silk, rayon and asbestos cards and for all types of napping machinery. Brusher clothing and card clothing for special purposes. Lickerin wire and garnet wire. Sole distributors for Platt's metallic wire. Lickerins and top flats reclothed.



## Ashworth CARD CLOTHING

how close are you to Carteret, N.J.?



A Dow Caustic Soda Terminal!

***The Textile Industry Needs Thousands of Tons of Caustic Soda Each Year!***

To keep production lines rolling at a steady pace, the textile industry must have prompt caustic soda delivery. For this reason Dow maintains an outstanding network of distribution facilities. In addition to Dow's caustic soda solution terminal in Carteret, New Jersey—Dow operates caustic soda plants in Midland, Michigan; Freeport, Texas and Pittsburg, California.

Dow caustic soda solution is also shipped from bulk tank terminals in Los Angeles, California and Charleston, South Carolina. Caustic soda solid, flake and ground flake are shipped from terminals in Port Newark, New Jersey; Chicago, Illinois and Charleston, South Carolina. All of these distribution points help provide the textile industry with the service it requires.

**wherever you are...** *you're close to*

**DOW CAUSTIC SODA**

**THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN**

New York • Boston • Philadelphia • Atlanta • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada

DOW

CHEMICALS

INDISPENSABLE TO INDUSTRY AND AGRICULTURE

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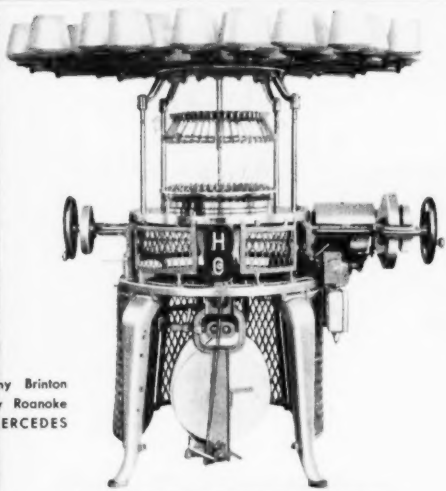
Roanoke MILLS, INC.

OF ROANOKE, VA.

producing garments of proven popularity for Henry J. Tully & Co., for many years an outstanding name in knitwear.

Quality knitwear requires quality knitting machines. That's why BRINTON has been a watchword among the world's greatest knitwear makers since 1888. Brinton machines on your production line give your garments built-in saleability.



One of the many Brinton machines used by Roanoke is the Model MERCEDES shown here.

*Engineered for the World's Greatest Knitwear Makers*

BRINTON

CIRCULAR KNITTING MACHINES

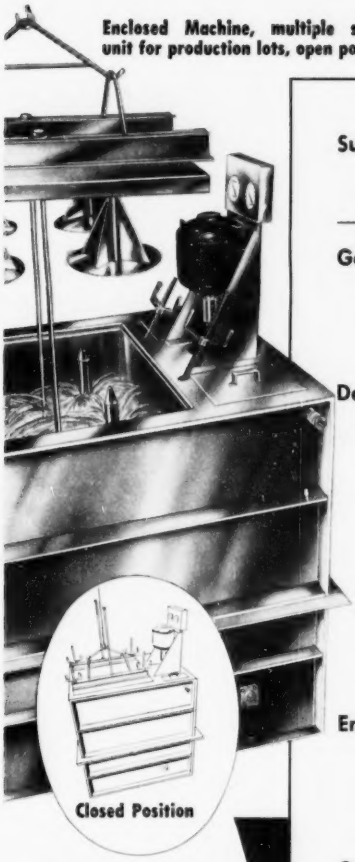
KENSINGTON AVE. & M ST., PHILA. 24, PA., U.S.A.

## Model MERCEDES Style RMP

This high production revolving cylinder machine makes a wide variety of articles. It produces that fine balbriggan or plain jersey fabric for either underwear, basque, polo or T-shirts with colored yarns.

It has no special attachments—it's easy to understand and operate. It operates continuously, too, by simply using double cones on the stationary bobbin table.

Write for more detailed information on the MERCEDES, a machine of proved performance with average production of 75 to 80 yards per hour on every machine size.



Enclosed Machine, multiple spindle unit for production lots, open position.

Closed Position

## Subject: TOP DYEING MACHINE

*For Brighter and More Uniform Colors*

**General:** Riggs and Lombard Top Dyeing Machines are in service in many of the best-known mills. Both Open and the new Enclosed Models are available in single spindle machines for dyeing samples or small lots as well as the multiple spindle sizes.

**Details:** The Fleet Line's stainless steel Top Dyeing Machine, in both Open and Enclosed Models, offers these advantages:

Brighter and more uniform colors, and elimination of dirt and pipe scale in the bath, due to stainless steel construction.

Uniform pressures, adequate for rayon and mohair tops as well as for worsted, in all spindles.

Wide adaptability, with no need for special winding equipment as the machine takes any top.

Exceptional ease in unloading, simplified installation, great reduction in maintenance cost and saving in floor space — all due to refinements of design.

**Engineering:** Consult our Engineering Service without obligation on all problems of installation and operation of wet finishing, carbonizing and dyeing equipment. We manufacture a complete line of modern finishing equipment, including special equipment.

**Catalog:** Catalog Page 7, sent on request, lists unique and original advantages, with full description of operation and diagrams of efficient unloading arrangements.

*The Fleet Line*

A complete line of modern equipment to successfully handle present day wet finishing, carbonizing and dyeing requirements; available catalogs are listed below; will be sent on request; just use the coupon:

3—Piece Dye Kettles
4—Bleach and Dye Kettles for Tubular Knit Goods
5—Sample Piece Dye Kettles
6—Dye-Becks
7—Top Dye Kettles
8—Stock Dye Kettles
9—Continuous Cloth Washers
10—Cloth Washers
11—Soaping Systems
12—Soaping Machines
13—Fulling Mills
14—Squeeze Roll Extractors & Padders
15—Yarn Steamers & Conditioners
16—Derby Continuous Dry Cleaner
17—Cloth Dryers
18—Carbonizing Ranges
20—Continuous & Semi-Continuous Crushers
21—Progressive Jigs
23—Rolls & Reels
24—Tanks, Pails, etc.
25—Stainless Steel Trucks

## RIGGS & LOMBARD, INC.

FOOT OF SUFFOLK ST., LOWELL, MASS.

**DOMESTIC AGENTS:**—Paul A. Merriam, 1491 Broad St., Prov., R. I. • Charles H. Dunker, 1236 So. Maple Ave., Los Angeles 15, Calif. • Albert R. Breen, 80 E. Jackson Blvd., Chicago 4, Ill.

**EXPORT AGENTS:**—Latin America—Balkan States, Egypt, Palestine, India—Meyer, Lyra & Co., 228-229 Fulton St., N. Y., N. Y. • South Africa—Noel P. Hunt, Pty., Ltd., Embassy House, 327 West St., Durban, South Africa • China—G. R. Coleman & Co., Inc., 50 Church St., N. Y., N. Y. • Canada—H. E. Mott Co., Limited, Brantford, Ontario.

**RIGGS & LOMBARD, Foot of Suffolk Street, Lowell, Mass.**

Gentlemen: Without obligation, send us data on the finishing equipment indicated by these key numbers:

Name and Title .....

Company .....

Address .....

# this is for YOU, too

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INTER-OFFICE CORRESPONDENCE
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FROM: RESEARCH AND DEVELOPMENT DIVISION
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WHITINSVILLE, MASSACHUSETTS

CHARLOTTE, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

# Teamwork

Cutting through "live" wood in the forest or "dead" wood in industry, results are faster and surer when push-and-pull are based on teamwork.

What can we do to help insure the future of your business? That's what Butterworth engineers have been asking for 131 years — the question has special meaning today.

Thinking of new machines? We will do the utmost to meet your requirements. Making long range plans? Our engineers are at your service. Even now they are teamed with many of America's leading mills, thinking of the years ahead and planning with them to maintain their competitive position.

Butterworth service is offered too, to help your wet finishing department get the most out of what you now have — to keep equipment at peak efficiency. It may be only a spare part you need — but if you need it in a hurry, you'll get it in a hurry if it is humanly possible.

A letter, a wire or a phone call will put a Butterworth engineer on your team.

H. W. BUTTERWORTH & SONS COMPANY
Bethayres, Pennsylvania

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## ...with the new

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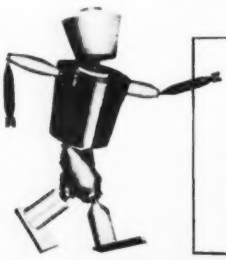

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## UNIVERSAL WINDING COMPANY

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***Agents in every principal textile center throughout the world***

*Winding and Twisting Machinery for Natural and Synthetic Yarns*

Rayon Reports

Prepared Monthly by American Viscose Corporation, New York, N.Y.

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Obviously, a great factor in creating volume sales is the lowered cost that rayon makes possible, while maintaining high standards of quality.

**MAKE USE OF *Avisco*® 4-PLY SERVICE**

To encourage continued improvement in rayon fabrics, American Viscose Corporation conducts research and offers technical service in these fields:

**1 FIBER RESEARCH**
**2 FABRIC DESIGN**
**3 FABRIC PRODUCTION**
**4 FABRIC FINISHING**

**AMERICAN VISCOSE CORPORATION**

*World's largest producer of man-made fibers*

RAYON ACETATE VISYON* FILATEX®

*Sales Offices:* 350 Fifth Avenue, New York 1, N. Y.; Charlotte, N. C.; Cleveland, Ohio; Philadelphia, Pa.; Providence, R. I.

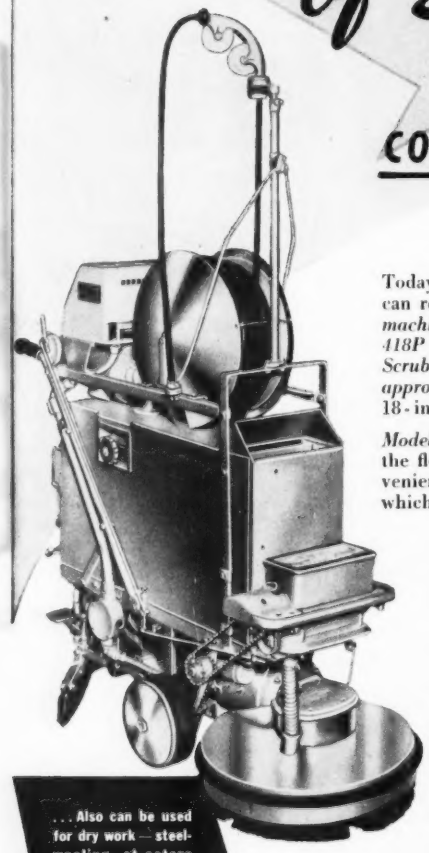
*TMC & CCC

SMALL-AREA BUILDINGS...

# Save 2/3 of Every Hour of Scrubbing Time

WITH A

## COMBINATION SCRUBBER-VAC!



...Also can be used for dry work — steel-wooling, et cetera

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*Finnell* makes *Scrubber-Vac Machines* for small, vast, and intermediate operations, and in *self-powered* as well as *electric* models. From this complete line, you can choose the size and model that's exactly right for *your* job (no need to *over-buy* or *under-buy*). It's also good to know that you can lease or purchase a *Scrubber-Vac,* and that *there's a Finnell man nearby* to help train your maintenance operators in the proper use of the machine and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 1310 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

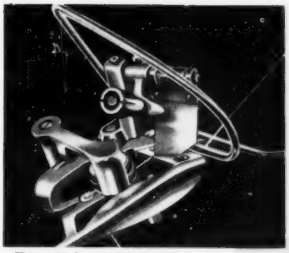
*Conserve Manpower with Completely Mechanized Scrubbing*

**FINNELL SYSTEM, INC.**

*Originators of Power Scrubbing and Polishing Machines*

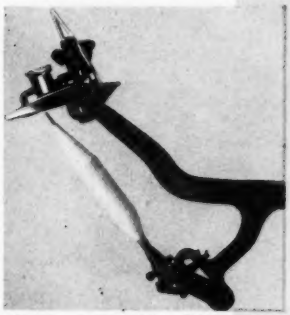
Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

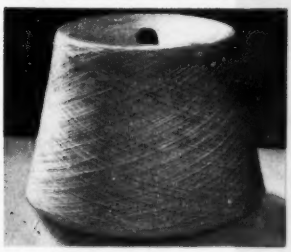


Type 51 A — self threading tension and slub catching attachment.

Easy doffing. Package holder swings out.



Supply skewer which always swings back into place after doffing.



Typical worsted cone.

# 6 ADVANTAGES YOU WANT *in a wool and worsted winder*

Here are six things which you (or any mill man) want in a wool and worsted winder and which can be obtained with a Foster Model 102.

1 **HIGH PRODUCTION.** This machine will produce twice as much as an obsolete model, being capable of winding speeds up to 700 y.p.m. (One mill that we know of is running 80's worsted at 400 y.p.m.). It can be built to wind 7" traverse packages, if desired.

2 **LOW OPERATING COST.** Approximately ⅓ less than that of obsolete models. Labor saving features include self threading tension devices, easy doffing, efficient knock-off mechanism, and a supply skewer for single mule spun yarns which always swings back into place and prevents a mule cop from jumping off; it also permits a single balloon which reduces breakage.

3 **LOW MAINTENANCE AND REPAIRS.** A specially trained mechanic is not required to maintain this machine or make changeovers. Hardened steel or porcelain parts minimize cutting and grooving by hard twist yarns. Repair costs run as low as $3.50 per year per 100 spindle machine.

4 **A GOOD PACKAGE.** Angle of wind may be varied between 9° and 18° by means of simple gear changes. Thus, the *correct* angle of wind for any given type or count of yarn is obtainable, and firm, well shaped packages are assured. Yarn may be conditioned, if desired.

5 **A CLEAN YARN.** Our Type 51-A Tension and Slub Catching Attachment will break out slubs or other imperfections. Thus, burling and mending costs are materially reduced.

6 **FLEXIBILITY.** In case the types of yarn you produce change, angle of wind and taper on Foster Model 102 may be changed accordingly, to handle any kind and count of staple yarn and to produce warping cones, knitting cones, parallel tubes, short traverse tubes, or dye packages.

*Send for Bulletin A-95.*

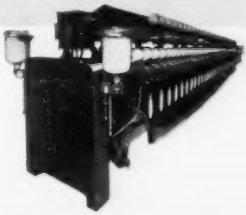
**FOSTER MACHINE CO.**

**Westfield, Mass., U.S.A.**

Southern office, Johnston Bldg., Charlotte, N. C. — Canadian Representative, Ross Whitehead & Co., Ltd., 1475 Mountain St., Montreal, Que. — European Representative, Muschamp Taylor, Ltd., Ashton-under-Lyne, England.

# FOSTER MODEL 102

*The Flexible Winder*



FOR COTTON, MERCERIZED, WOOL, WORSTED, MERINO, SPUN SILK OR SPUN RAYON YARNS

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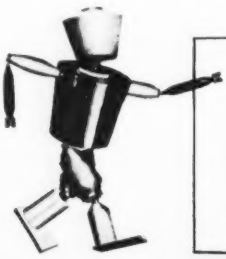

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*TMC & COC

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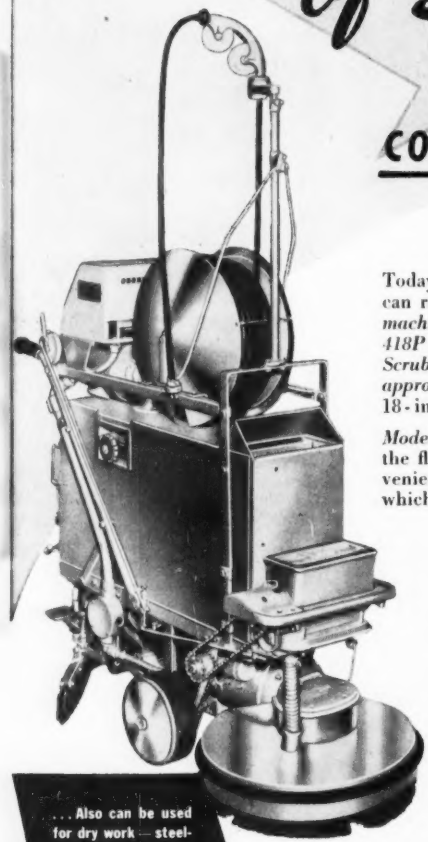

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Today, even buildings with but 2,000 to 15,000 sq. ft. of floor space can reap the labor-saving, cost-reducing benefits of *combination-machine-scrubbing.* Here's a *Combination Scrubber-Vac, Model 418P* at left, that's specially designed for such buildings. This *Scrubber-Vac,* which has an 18-inch brush ring, cleans floors in *approximately one-third the time* required with a conventional 18-inch machine and separate vac unit.

*Model 418P* applies the cleanser, scrubs, and picks up (damp-dries the floor) — *all in one operation!* Maintenance men like the convenience of working with this single unit... the thoroughness with which it cleans... and the features that make the machine simple to operate. It's *self-propelled,* and has a *positive* clutch. There are no switches to set for *fast* or *slow*—slight pressure of the hand on clutch lever adjusts speed to desired rate. The powerful vac performs efficiently and quietly. (Powder dispenser is optional.) Compactly built, the *418P* also serves advantageously in larger buildings for the care of floors in narrow aisles and congested areas.

*Finnell* makes *Scrubber-Vac Machines* for small, vast, and intermediate operations, and in *self-powered* as well as *electric* models. From this complete line, you can choose the size and model that's exactly right for *your* job (no need to *over-buy* or *under-buy*). It's also good to know that you can lease or purchase a *Scrubber-Vac,* and that *there's a Finnell man nearby* to help train your maintenance operators in the proper use of the machine and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 1310 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

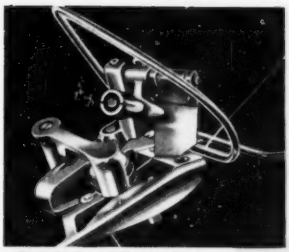
*Conserve Manpower with Completely Mechanized Scrubbing*

**FINNELL SYSTEM, INC.**

*Originators of Power Scrubbing and Polishing Machines*

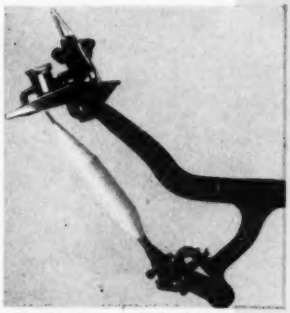
Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

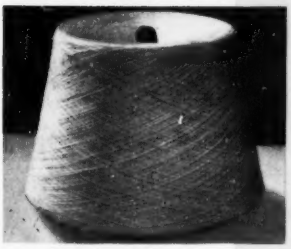


Type 51 A — self threading tension and slub catching attachment.

Easy doffing. Package holder swings out.



Supply skewer which always swings back into place after doffing.



Typical worsted cone.

# 6 ADVANTAGES YOU WANT *in a wool and worsted winder*

Here are six things which you (or any mill man) want in a wool and worsted winder and which can be obtained with a Foster Model 102.

1 **HIGH PRODUCTION.** This machine will produce twice as much as an obsolete model, being capable of winding speeds up to 700 y.p.m. (One mill that we know of is running 80's worsted at 400 y.p.m.). It can be built to wind 7" traverse packages, if desired.

2 **LOW OPERATING COST.** Approximately ⅓ less than that of obsolete models. Labor saving features include self threading tension devices, easy doffing, efficient knock-off mechanism, and a supply skewer for single mule spun yarns which always swings back into place and prevents a mule cop from jumping off; it also permits a single balloon which reduces breakage.

3 **LOW MAINTENANCE AND REPAIRS.** A specially trained mechanic is not required to maintain this machine or make changeovers. Hardened steel or porcelain parts minimize cutting and grooving by hard twist yarns. Repair costs run as low as $3.50 per year per 100 spindle machine.

4 **A GOOD PACKAGE.** Angle of wind may be varied between 9° and 18° by means of simple gear changes. Thus, the *correct* angle of wind for any given type or count of yarn is obtainable, and firm, well shaped packages are assured. Yarn may be conditioned, if desired.

5 **A CLEAN YARN.** Our Type 51-A Tension and Slub Catching Attachment will break out slubs or other imperfections. Thus, burling and mending costs are materially reduced.

6 **FLEXIBILITY.** In case the types of yarn you produce change, angle of wind and taper on Foster Model 102 may be changed accordingly, to handle any kind and count of staple yarn and to produce warping cones, knitting cones, parallel tubes, short traverse tubes, or dye packages.

*Send for Bulletin A-95.*

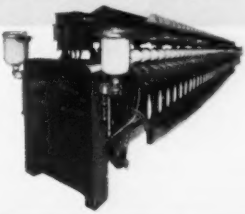
**FOSTER MACHINE CO.**

**Westfield, Mass., U.S.A.**

Southern office, Johnston Bldg., Charlotte, N. C. — Canadian Representative, Ross Whitehead & Co., Ltd., 1475 Mountain St., Montreal, Que. — European Representative, Muschamp Taylor, Ltd., Ashton-under-Lyne, England.

# FOSTER MODEL 102

*The Flexible Winder*



FOR COTTON, MERCERIZED, WOOL, WORSTED, MERINO, SPUN SILK OR SPUN RAYON YARNS

# SAVINGS FOR SALE

**IDEAL MACHINE SHOPS PRESENTS**

## The Complete FLYER TUNE-UP SERVICE

A bargain package of flyer maintenance! Check these steps in Ideal's FLYER TUNE-UP service . . . designed to save you money by *preventing* breakdowns and costly repairs, assuring peak production. And, you can pay for this service with only a fraction of the money you save by avoiding extensive repairs. Ask an Ideal representative about a periodic flyer tune-up schedule for your mill. You'll profit by it!

**NOSE STRAIGHTENING**

Off-center flyer noses are pressed into perfect alignment with barrel and spindle, eliminating the jerking motion which causes excessive wear, and results in thick-and-thin places in roving.

**SELECTO-SPEED BALANCING**

(PATENTED)

Every flyer is balanced at the specified speed which you designate for your frames. This method results in the smoothest, steadiest flyer operation obtainable.

**BLOCKING FLYERS AND PRESSERS**

Designed to correct roving unevenly or incompletely built on bobbins, Ideal's specialized experience in blocking flyers and pressers assures uniform shape and maximum build of roving.

**SLOT GAUGING**

By adjusting flyer slots to your specified hank roving, Ideal assures ease in pulling ends down, and overcomes the difficulties of choked flyer legs and unthreaded roving.

**GET YOUR FREE COPY**

Write for a FREE copy of our 8-page illustrated, 2-color booklet "New Life for Your Flyers". Designed to point the way to more economical operation for you, it explains what happens to aging flyers and what Ideal does to keep them young.

## IDEAL MACHINE SHOPS, INC.

*Phones 4161 and 4391*

**BESSEMER CITY, NORTH CAROLINA**

**28TH YEAR OF CONTINUOUS SERVICE TO TEXTILE MILLS**

# "Tycol Armitage boosts bearing life... smooths the way for faster, heavier loads"

Of course! Tycol Armitage Bearing Grease "stays put" ... keeps anti-friction bearings running smooth and cool. Its high stability makes it suitable for sealed anti-friction bearings that must last the life of the equipment.

Tycol Armitage possesses exceptional resistance to oxidation.

The dependable lubricating ability of this quality grease lengthens bearing life and cuts down maintenance costs.

Call your nearest Tide Water Associated office for further information.

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TIDE WATER ASSOCIATED OIL COMPANY

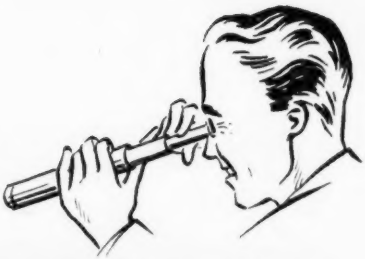
17 BATTERY PLACE | NEW YORK 4, N. Y.

**SEND FOR A FREE COPY OF "TIDE WATER ASSOCIATED LUBRICANIA"**



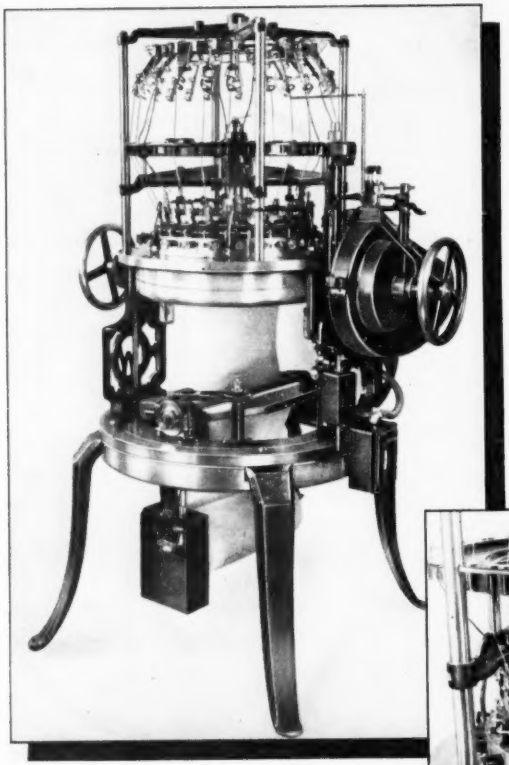
*For further information use Handy Return Card, Page 230*

# If you're looking for TOP VALUE



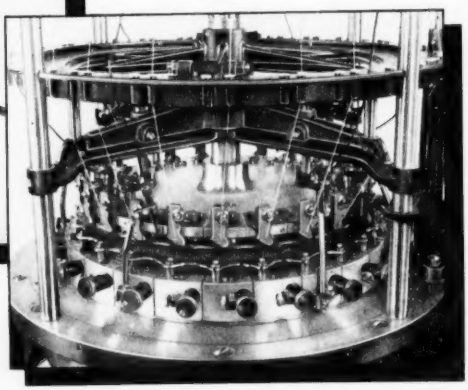
## the WILDMAN Multiple Feed Rib Machine is

## Precision Engineered for Top Performance



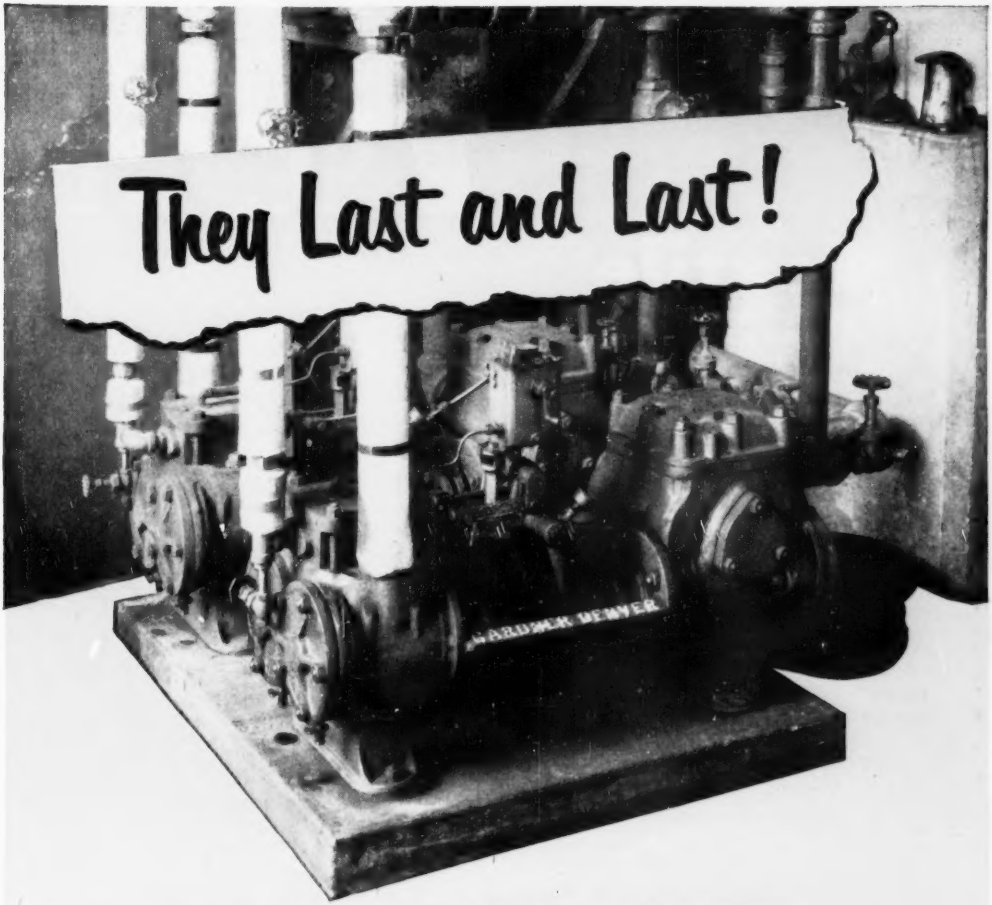
This is a production man's dream — for here you get better styling, uniform sizes and more than DOUBLE PRODUCTION . . . pattern designs increased in sports wear and all other knitted goods . . . uniformity in garment sizes for yarn is fed under even constant tension . . . Double production with a power increase of only about one-third.

**PRECISION ENGINEERED**
**— TOP PRODUCTION PERFORMANCE**



*"One of Wildman's Finest"*

**WILDMAN MANUFACTURING CO.** *NORRISTOWN PENNSYLVANIA*




# ...choose GARDNER-DENVER Duplex Pumps

**Perking Along Since 1907**

A company in New Orleans installed a Gardner-Denver Duplex Pump in 1907—has been using it ever since. They say it is still the best pump in the mill.

**Check these advantages:**

- Can be used with either steam or air power.
- Versatile—give you variable capacities, fluid pressures and speeds from the same installation. For example, a 6 x 4 x 6 pump may be operated at 0 to 118 G.P.M. . . . 0 to 250 lbs. fluid pressure . . . 0 to 90 R.P.M.
- Available with removable fluid liners and valve seats.
- May be fitted for abrasive or corrosive service.

Atlanta, Ga. • Birmingham, Ala.
Knoxville, Tenn. • Washington, D. C.
New York, N. Y. • Philadelphia, Pa.
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**GARDNER-DENVER**

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**THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS**

New
ALLIS-CHALMERS
Textile
Drives
Guard
Removed
New Allis-Chalmers card drive is Allis-Chalmers totally-enclosed, non-ventilated motor driving Falk right angle gear reducer through *Texrope* V-belt drive and centrifugal clutch. Separate sheave provides power for stripping cylinder and doffer. Complete drive mounts on card shaft.

# CARD DRIVE

### Compact

Requires practically the same floor space as an overhead belt drive. Drive is mounted directly on card shaft with torque arm to keep it in position. No strain on card arch to cause vibration or distortion.

### Reduces Maintenance Costs

No heavy, expensive belts to wear out. No periodic belt dressing. Each machine can be shut down independently for maintenance or changeover instead of a whole bay. Vibrationless drive increases life of all parts and makes machine easier to keep in adjustment.

### Cleaner Operation

No sticky belt dressing to catch dirt. Won't throw oil and dirt into material to cause low quality goods or rejects.

### Uniform Speed

Drive unit locked tightly to shaft. No slip to cause speed variations and low quality product.

### Safer

No belt to catch hands or clothing, especially during grinding and cleanout.

ARE YOU STILL USING OVERHEAD BELT DRIVES on your cards because no one has come out with a good card drive that can be installed at a reasonable price? Well, here is the card drive you have been looking for.

You don't have to move your cards to install this drive. It will fit in the same space as your present drive. And it's easy to install. Simply fit the Falk gear reducer on the shaft and attach a torque arm to keep it in position. Stripping procedures are almost the same as with your present drive. The savings in lower maintenance costs, more production and higher quality goods will soon more than pay for the new drive.

Think how much neater, lighter and more efficient your plant will be, too, without that forest of shafting and belting hanging from the ceiling. Ask the Allis-Chalmers representative to show you what new card drives will do for your mill. Or write Allis-Chalmers, Milwaukee 1, Wis., and ask for Bulletin 51B7867.

A-3785

*Texrope, Quick-Clean and Vari-Pitch* are Allis-Chalmers trademarks.

**Send for Free Engineering Literature**

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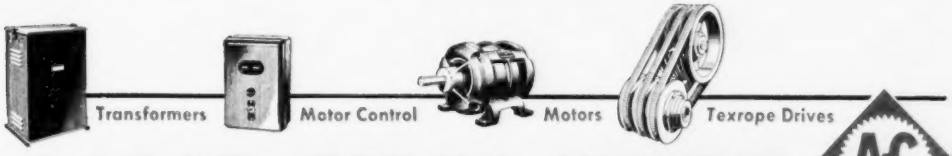
*Texrope* Drives - - - - - 20B6051
*Vari-Pitch* Sheave - - - - - 20B7499
Dielectric Heater - - - - - 15B6431
Power Generating Equipment, Transformers, Circuit Breakers, Power Distribution Equipment 25B6150

**COMPLETE SERVICE — from power line to machine**



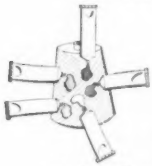

# ALLIS-CHALMERS

***Originator of the Multiple V-Belt Drive for the Textile Industry***

# Celanese introduces...

# CELAPERM*

## *a color-pigmented filament acetate yarn with the consumer acceptance of the Celanese* trademark*



In the past season color-pigmented yarns have assumed considerable importance in the styling and merchandising of textiles. Many of the new high-style effects in men's and women's apparel fabrics have utilized their special properties. In home furnishings they offer new standards of color fastness.

Celanese, aware of the problems as well as the virtues of color-pigmented yarns, has been working for several years to perfect processes that would deliver a high quality yarn in a wide range of colors and deniers.

The result is Celaperm, a color-pigmented filament acetate yarn which will have very wide application.

***Celaperm has been tested for color fastness to home laundering, dry cleaning, bleeding and crocking, perspiration and salt water, sunlight and gas fading. Accelerated tests on ten Celaperm colors showed no appreciable color change.***

To produce Celaperm, Celanese has developed special purpose machinery and methods which are believed to be the most advanced in the field. We are now ready to quote delivery of Celaperm in a range of basic colors and in suitable deniers and packages.

Celanese believes that color-pigmented yarns have a permanent place in modern textile production and we are therefore planning to produce Celaperm in an increasingly wide variety of seasonal colors, sizes and packages. We are particularly interested in supplying mills on a continuous basis.

Where fastness and beauty of color are prime considerations, look to Celaperm.

Celanese Corporation of America, 180 Madison Ave., New York 16.

**Celanese*** **ACETATE, one of the world's great textile fibers**

*Reg. U. S. Pat. Off.

# 3 big savings with Gates Multi-Check Strap

**1** ***Lasts 2 to 10 times longer***

than one-piece straps, scores of mills report. That's because the tough, resilient Tex-Hide in the Multi-Check Strap doesn't stretch, crack, or deform. And *progressive checking* distributes wear over all four molded bands, giving longer check strap life.

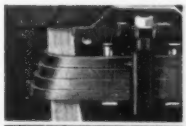
**2** ***Makes picker sticks last longer.***

An *open-end* strap (1) drags around the ends of the picker stick, and (2) forces it against the back of the slot. Wear at these points weakens sticks. Double-brake checking with Multi-Check Strap eliminates this wear—saves sticks.

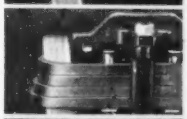
**3** ***Makes pickers last longer, too.***

When an open-end strap forces the picker stick toward the back of the slot, the shuttle spur strikes the picker off-center, wearing out the side of the shuttle hole. Multi-Check strap keeps picker stick aligned with shuttle, eliminating this costly wear.

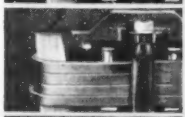
***Here's the smoothest shuttle check you've ever had . . .***



Picker stick contacts *top* band of Multi-Check Strap.



Stick is then slowed by *second* band of tough Tex-Hide.



*Third* band absorbs more of the shuttle force.

*Fourth* band takes its share of the shock. Stick is checked *gradually* by *all 4 bands* acting together.

***No down time for adjustments . . .***
***smoother loom operation . . .***

The savings in replacement costs of check straps, pickers, and picker sticks *are not the only savings.* Gates Multi-Check Strap greatly reduces down-time for replacement and adjustment of these parts.

And the smooth check you get helps eliminate shuttle bounce . . . makes looms run more smoothly.

All these advantages add up to *greater production, higher quality cloth, lower maintenance and replacement costs.*

Put Gates Multi-Check Straps on a section of your looms. Compare results!

**The Gates Rubber Company, Denver, U. S. A.**

*Engineering offices and warehouse stocks in all textile centers.*

Tex-Hide Harness Straps

Tractive-Rib Roll Covering Cone and Evener Belts

Tex-Hide Reversible Pickers



Gates

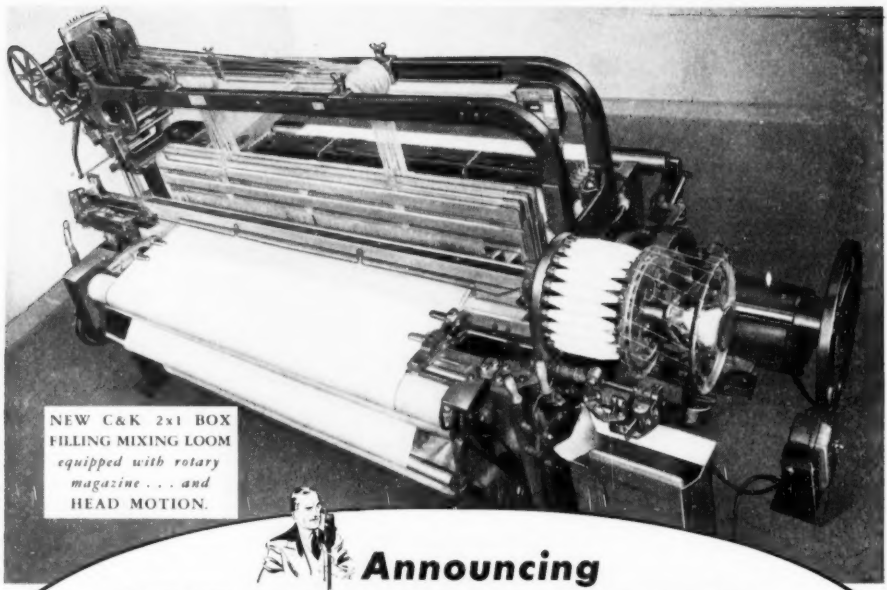
V-Belt Loom Drive Textile Mill Hose

Tex-Hide Loop Pickers

Tex-Hide and Super Tex-Hide Lug Straps

## Gates Tex-Hide Multi-Check Strap

TP-529



NEW C&K 2x1 BOX FILLING MIXING LOOM *equipped with rotary magazine . . . and* HEAD MOTION.

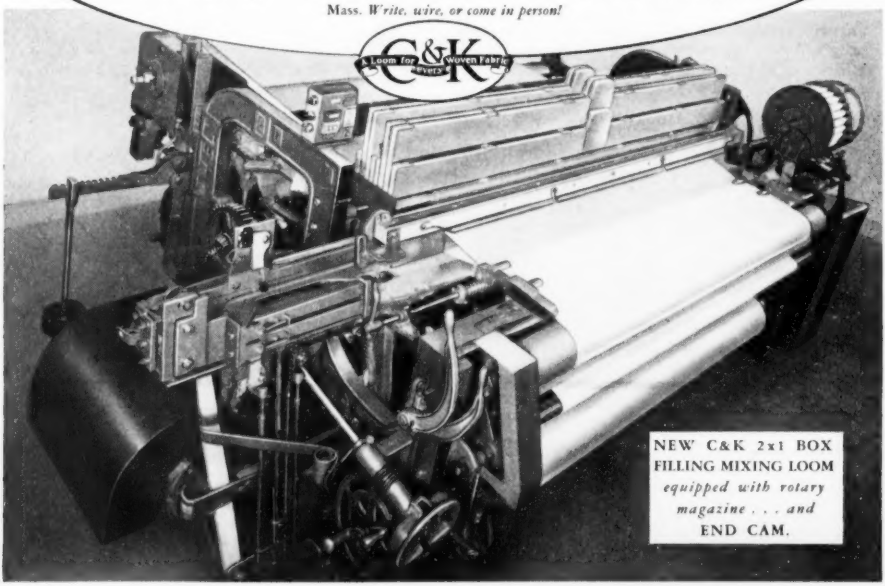


## *Announcing*

# NEW ADDITIONS to C & K's *Long-Established Line of* FILLING-MIXING LOOMS

Here's what you have expected . . . the natural result of C&K's long experience in designing filling-mixing looms. These new 2x1 box, single-color, high speed, rotary magazine looms can be built for any type of fabric construction . . . with any type of shedding mechanism . . . head motion, dobby or end cam. And now *you* are invited to "See C&K", and to get the whole story straight from World HQ for FM Looms . . . CROMPTON & KNOWLES, Worcester, Mass. *Write, wire, or come in person!*

C&K — 1 Loom for Every Woven Fabric



NEW C&K 2x1 BOX FILLING MIXING LOOM *equipped with rotary magazine . . . and* END CAM.

# Let's talk FIRSTS . . .

There's a beauty contest at hosiery counters every day — with perfectly finished stockings the winners.

For more "firsts"— 120 to 130 dozen pairs per 8-hour day — you can depend on the Turbo AD-48. It's a dual-purpose machine for preboarding and finish boarding. Requires only one operator.

In preboarding, automatic steam pressure controls and accurate timing assure quality production. In finish boarding, fan circulated hot air is directed on the stockings with greater air flow to the welt and toe for thorough, even drying. Steady, automatic temperatures give you static-free, perfectly finished stockings.

Two groups of 24 forms each, operate on a collapsible "spider" with smooth quiet precision — there is no jolting or banging to injure delicate threads. Operation of forms may be automatic or semi-automatic, depending on the operator's production rhythm. Leg forms remain upright, fabric will not creep. Forms stop with ample spacing for maximum speed in dressing, undressing and inspection.

Forms are easily changed — you can run two sizes at one time.

Get all the facts — write today for the Turbo story on preboarding and finish boarding.

**TURBO MACHINE COMPANY**
*Lansdale, Pennsylvania, U.S.A.*
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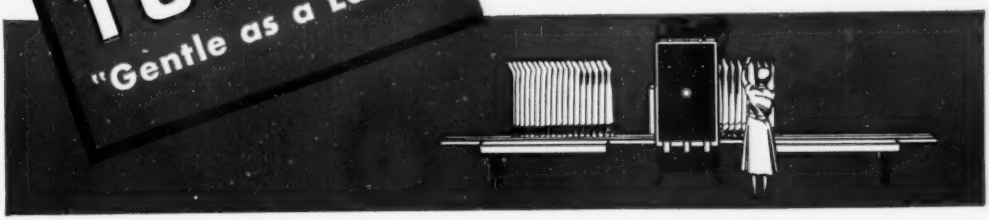
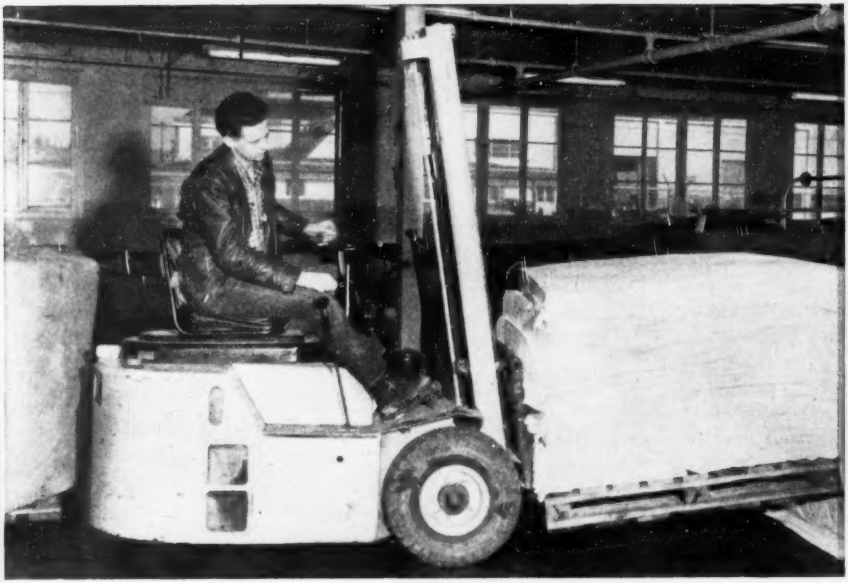
**TURBO**
**"Gentle as a Lamb"**



# HYSTER® 20 Lift Trucks
## *handle loads faster and cheaper in*
# TEXTILE PLANTS



Hyster 20 (2000 lb. capacity)

Hyster fork-type Lift Trucks, Turret Trucks, Straddle Trucks and Karry Krane have capacity ranges from 1000 lbs. to 30,000 lbs. Sold and serviced by Hyster dealers around the world.

**SMALL IN SIZE.** Hyster 20 is only 37 inches wide. Gets in and out of tight spots or narrow passageways quickly, efficiently. Rolls on pneumatic tires — works equally well indoors or outdoors. Trunnion mounted steering permits great maneuverability.

**BIG IN RESULTS.** Hyster 20 is fast, stacks high, goes anywhere. Easy on floor surfaces, on the operator, and on loads. Simple to operate. Low maintenance costs. Quality built to give years of heavy duty service. Cuts the heart out of materials handling costs — adds to net profits by saving time, money, manpower.

**SEE YOUR HYSTER DEALER** for a demonstration and list of owners. Or write for literature.

## HYSTER COMPANY

***THREE FACTORIES***

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1802-57 NORTH ADAMS ST. . . PEORIA 1, ILLINOIS
1010-57 MYERS STREET . . . DANVILLE, ILLINOIS

**VOGUE says**

# Yellows

## —on the way in

***Sandoz has the dye you need***

**FOR WOOL PIECE DYEING**

Xylene Light Yellow 2G
*or for better fastness to perspiration . . .*
Xylene Fast Yellow 2GP

**FOR DYEING WORSTED TOP OR WOOL RAW STOCK, AND FOR SILK PIECE DYEING**

- Xylene Milling Yellow 3GL Pat.

**FOR SPUN OR FILAMENT VISCOSE DRESS GOODS, PLAIN OR WHITE DISCHARGEABLE**

- Pyrazol Discharge Yellow G

For spun viscose requiring maximum fastness to washing and perspiration and aftertreatment with urea-formaldehyde, Sandoz recommends CUPROFIX YELLOW GLE or RESOFIX YELLOW GL aftertreated by the combined CUPROFIX/Resin method.

*You can depend on Sandoz to provide the best colors to meet your specified requirements.*

*For forecast colors as well as perennial favorites for both natural and synthetic fibers, select from the Sandoz line of chrome, acid, acetate, direct dyes and auxiliary chemicals: detergents, dyeing assistants, finishes.*

**SANDOZ**

*thinks ahead with textiles*

SANDOZ

SANDOZ CHEMICAL WORKS, INC., 61 Van Dam Street, New York 13, N. Y. Sales Offices: Boston, Providence, Fairlawn, N. J., Philadelphia, Charlotte, Chicago, Los Angeles, Montreal, Toronto.

# Three Products that Solve Three Problems

**on wool, cotton, and man-made fibers**

- *scouring*
- *dispersing dyestuffs*
- *wetting out*

## Sandopan TN

scouring efficiently alone or in combination with soap or alkali . . . excellent in scouring, boil-off, kier boil, and for soaping-off, vats, and naphthols

## Sandopan TFL

disperses dyestuffs and simultaneously prevents the formation of dye specks . . . eliminates crack marks during dyeing

## Sandozol N

for instantaneous and even wetting from 70° F to 200° F offers fastest way to move goods from the loom to the finishing department

***These Sandoz products can be used singly or in combination.***

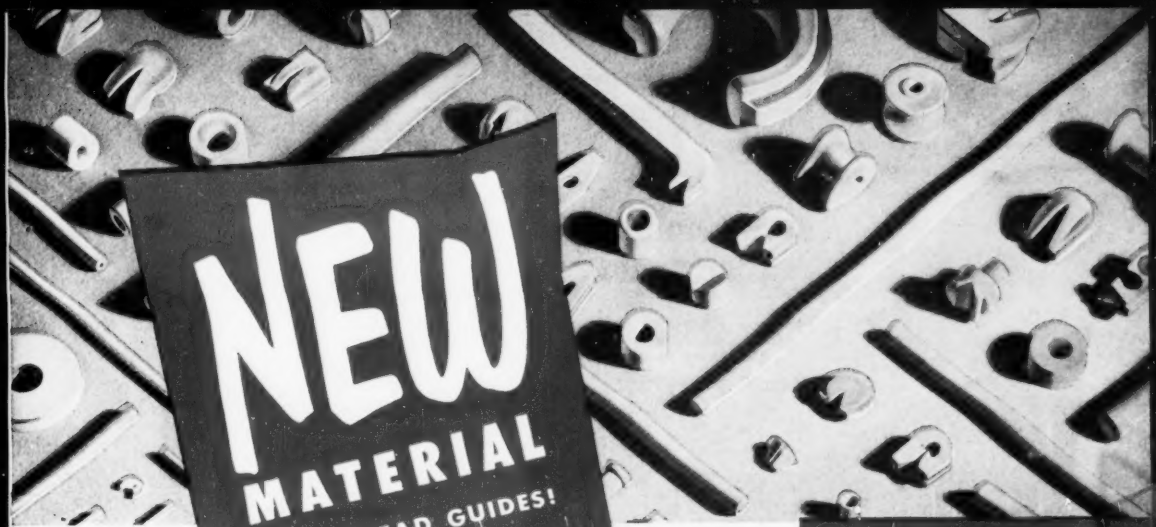
Send for your copies of these new Sandoz booklets:

**SANDOPAN TN**
**SANDOPAN TFL**
**SANDOZOL N**

SANDOZ Chemical Works, Inc., 61 Van Dam Street, New York 13, N. Y. ***Sales Offices:*** Boston, Providence, Fairlawn, N. J., Philadelphia, Charlotte, Chicago, Los Angeles, Montreal, Toronto.

**SANDOZ** *thinks ahead with textiles*

SANDOZ




# ALSIMAG® 513

***9 on Mohs' Scale...HARD...STRONG...Resists wear and chipping...Maintains original finish LONGER!***

For the past three years AlSiMag 513 Thread Guides have been tested in a number of leading textile mills. They have been run in every day production on a variety of the most difficult applications we could find. The announcement of this material was delayed until adequate practical experience in various mills had completely confirmed our laboratory tests. Thus, though this is a NEW material it is THOROUGHLY TESTED and PROVED SUPERIOR.

After three years of
practical tests
in leading textile mills
AMERICAN LAVA
CORPORATION
proudly announces
**ALSIMAG® 513**

GOOD NEWS ON PRICES, TOO! In most designs, AlSiMag 513 Guides (pink in color) can be obtained for the same prices as the famous AlSiMag 192 Guides (Cream colored).

**MECHANICAL PROPERTIES**
**ALSIMAG 513**

| | | |
|---|---|---|
| | | |
| | | |
| Specific Gravity | | 3.4 |
| Density | | .109 |
| | | |
| Safe Temperature at Continuous Heat | °C. | 1 350 |
| | °F. | 2 462 |
| | | |
| | | |
| | | |
| | | |
| | | |

51ST YEAR OF CERAMIC LEADERSHIP

**AMERICAN LAVA CORPORATION**

CHATTANOOGA 5, TENNESSEE

OFFICES: METROPOLITAN AREA: 671 Broad St., Newark, N. J., Mitchell 2-8159 • CHICAGO, 228 North LaSalle St., Central 6-1721
PHILADELPHIA, 1649 North Broad St., Stevenson 4-2823 • LOS ANGELES, 5603 North Huntington Drive, Capitol 1-9114
NEW ENGLAND, 1374 Massachusetts Ave., Cambridge, Mass., Kirkland 7-4698 • ST. LOUIS, 1123 Washington Ave., Garfield 4959
SOUTHWEST: John A. Green Co., 6815 Oriole Drive, Dallas 9, Dixon 9918

See this newest material at **BOOTH 509**
17TH SOUTHERN TEXTILE EXPOSITION
TEXTILE HALL, GREENVILLE, S. C.

**MINNEAPOLIS**
Sept. 29, through Oct. 1.

**MILWAUKEE**
Oct. 7, through Oct. 10.

**ST. LOUIS**
Sept. 23, through Sept. 26.

**BUFFALO**
Oct. 29, through Oct. 31.

**NEW HAVEN**
Nov. 11, through Nov. 13.

**BALTIMORE**
Nov. 18, through Nov. 20.

**NEWARK**
Nov. 4, through Nov. 7.

**CINCINNATI**
Oct. 21, through Oct. 23.

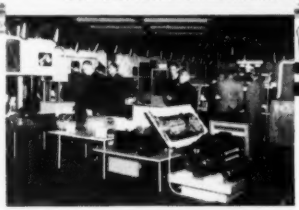
**WINSTON-SALEM**
Dec. 9, through Dec. 11.

# Coming to help you

**solve problems in design and production!**

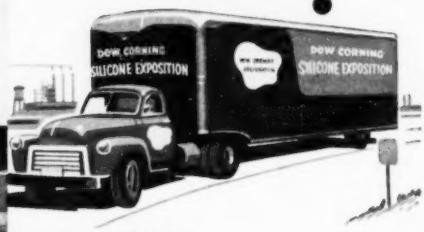
"BRINGING the mountain to Mohamet might best describe Dow Corning Corp.'s traveling exhibit . . . Free standing panels . . . separate the exhibit into nine bays, each emphasizing a property of silicones and showing where that property brings a benefit to an actual end product or operating unit . . ."
INDUSTRIAL MARKETING (June 1952)

"NEXT TO THE GREATEST SHOW ON EARTH . . . We could go on . . . reciting the fantastic properties of Silicones, but just as breathtaking as the materials were the display techniques used to demonstrate them . . ."
CIRCUIT RIDER (Vol. 6, No. 2, published by Electrical Construction and Maintenance)



". . . Heat Stability Plus: Visitors . . . see, among other demonstrations, how Silastic (Dow Corning's silicone rubber) remains soft and flexible at temperatures far above the limits of organic rubber . . ."
CHEMICAL WEEK (Jan. 26, 1952)

"IF YOU HAVEN'T already seen it, don't miss it when it comes around . . ."
POWER ENGINEERING (May 1952)




## DOW CORNING SILICONES . . . are no longer a mystery or a "future possibility" to the 17,000 executives and engineers, representing more than 4600 plants, who have already seen the Dow Corning Silicone Exposition.*

They learned that silicones are fluids and resins that keep clothes and shoes and brick walls dry in the rain. They're fluids that polish without rubbing.

They're rubber that won't melt on hot aircraft engine cylinders or freeze on switches that operate bomb bay doors at 100° below zero.

They're electrical insulating resins and varnishes that double the power of electric motors, or multiply by 10 the life of electric machines.

They're paints that protect metal at 1000°F. They're foam killers and release agents. They're a whole family of new engineering materials that can help you to improve your product or to cut production costs.

*In Boston • Chicago • Cleveland • Dayton Detroit • Fort Worth • Houston Indianapolis • Los Angeles • New York Philadelphia • Pittsburgh • Seattle Washington, D.C. • or Wichita.

***DON'T MISS IT***

**MAIL THIS COUPON TODAY**

**Dow Corning Corporation, Dept. BL-22**
**Midland, Michigan**

Kindly include me among your guests at the private showing of the Dow Corning Silicone Exposition in

- ☐ St. Louis
- ☐ Minneapolis
- ☐ Milwaukee
- ☐ Cincinnati
- ☐ Buffalo
- ☐ Newark
- ☐ New Haven
- ☐ Baltimore
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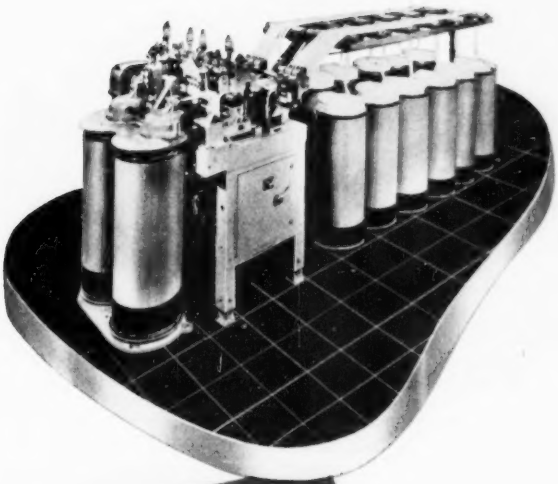
DOW CORNING SILICONES **CORPORATION**
MIDLAND, MICHIGAN

CANADA: Fiberglas Canada Ltd., 1200 Bay St., Toronto, Ontario
ENGLAND: Midland Silicones Ltd., 49 Park Lane, London, W.1

# "What other textile machine will give you a 33% return on your investment"



- Eliminates costly steps in preparation of sliver for roving
- Produces better, more evenly blended sliver in greater volume
- Reduces waste
- Uses either combed sliver or ball top
- Applicable to French, Bradford, or American systems

THE ABOVE STATEMENT is not ours. It was made by a textile executive in answer to our inquiry about the Pin Drafter's performance in his mill. A substantial savings on waste and labor costs have been attributed to the Warner & Swaseys in this mill's modernized combing and drawing departments.

But this is not an exceptional case. Many mill managers tell us that these machines are paying for themselves in 18 to 36 months.

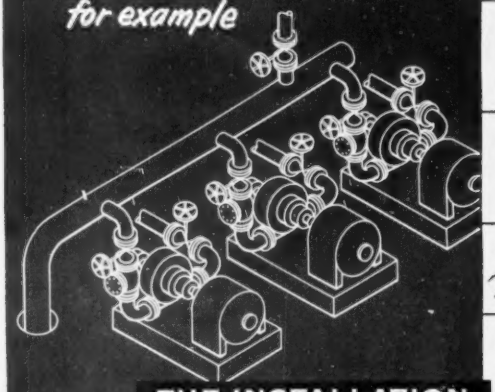
WARNER & SWASEY
TEXTILE MACHINERY DIVISION

**BRANCH OFFICES:**
6910 Market Street, Philadelphia, Pa. • Candler Building, Atlanta, Ga.
61 Rivulet St., North Uxbridge, Mass.

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS...WITH A WARNER & SWASEY

# Can You Trust Your Checks to Hold Like This?

## . . . on Water Pumps, for example



THE INSTALLATION

Crane Iron Body Swing Check Valves in 8-inch vertical lines on discharge side of water pumps supplying a large eastern paper mill.

## VALVE SERVICE RATINGS

**SUITABILITY:** Working smoothly - no complaints

**FEATURES:** O.K. for either horizontal or upward flow

**MAINTENANCE COST:** None - no maintenance needed to date

**SERVICE LIFE:** Now better than other checks used

**OPERATING RESULTS:** No water or head loss

**PRICE:** In line with other makes

**AVAILABILITY:** Stock item - Crane product

## THE HISTORY

The mill depends on these pumps for all water. Loss of head at the pumps would create a serious problem. The mill could take no such risks. Regularly, the check valves on pumps were replaced, but only to be found leaking between pumping cycles, a few months later.

It's now more than a year since the change-over was made to Crane Check Valves. There's been no loss of water, no maintenance or replacement of any checks on the pumps. That was proof enough for the mill, that Crane Quality means better valves —greater dependability and bigger value. As a result, 3 more of these checks were installed on a separate battery of suction pumps.

## THE VALVE

Crane No. 373, 125-Pound Iron Body Swing Check Valves, brass trimmed. The long life and high seating efficiency of these checks, in 2 to 8-in. sizes, is in large part due to the Crane patented flexible disc-hinge design. Double spring mounting eliminates lost motion between parts, yet permits true, full contact of disc and seat at every closure. Also serves to absorb the shock of seating under back-flow pressure. See your Crane Catalog or Crane Representative for full details.

*The Complete Crane Line Meets All Valve Needs. That's Why*

**More Crane Valves Are Used Than Any Other Make!**

# CRANE VALVES

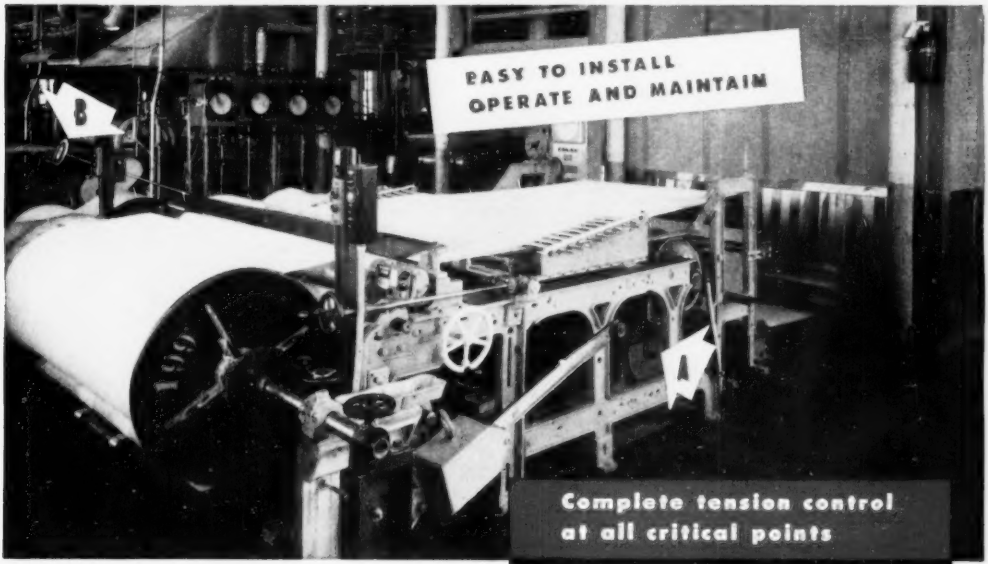
CRANE CO., *General Offices:* 836 S. Michigan Ave., Chicago 5, Illinois

*Branches and Wholesalers Serving All Industrial Areas*

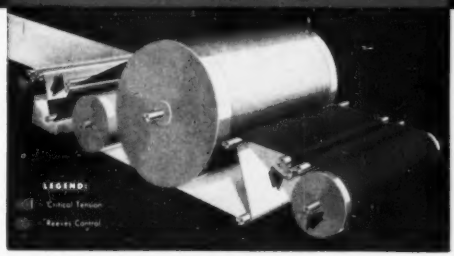
**VALVES • FITTINGS • PIPE • PLUMBING • HEATING**

# Build Better Beams with...

# REEVES "Servo-Control" Slasher Drive




*Arrow "A":* The Complete Slasher Drive "nests" neatly beneath slasher head-end frame. *Arrow "B":* Handwheel—for setting Beam drive to maintain desired yard tension.




**Add up all these quality-improving, money-saving advantages of REEVES "Servo-Control" Slasher Drive:**

**1** Finger-tip control from creep to run speeds by push button.

**2** Smooth acceleration and deceleration through 15:1 speed range.

**3** Quick, accurate, positive control of running speeds—without fluctuation—either manually or automatically tied in with moisture control.

**4** Automatic, uniform tension regulation as beam builds.

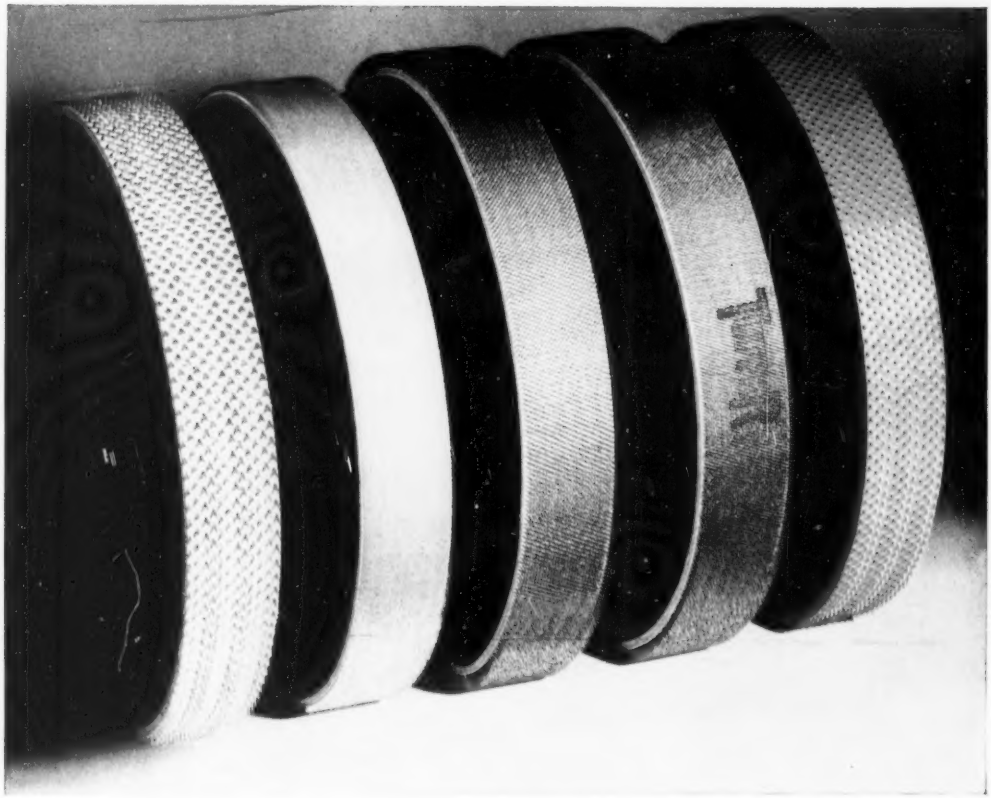
**5** Low initial cost; easily maintained by your mill mechanics; no complicated electrical hook-ups.

**6** "Nests" under slasher head-end frame.

It will pay you to get the complete story right away. Send for bulletin No. T63d-S.

accurate • variable
**REEVES** *Speed Control*

**REEVES PULLEY COMPANY • COLUMBUS, INDIANA**
*Recognized leader in the specialized field of speed control engineering*



# A Superior Product for EVERY TYPE of Carding

# TUFFER Card Clothing

**TUFFER PRODUCTS**

Card Clothing for Woolen, Worsted, Cotton, Asbestos and Silk Cards • Napper Clothing. Brush Clothing. Strickles. Emery Fillets. Top Flats Re-covered and extra sets loaned at all plants. Lickerins and Garnet Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant • Midgley Patented, and Howard's Special Inland Stripping Cards • Inserted Eye & Regular Wire Heddles

You can be sure of getting the Card Clothing best suited to your needs when you ask for a Howard Bros. recommendation. Our factory makes a superior product for every carding operation. Because we are equipped to make all types of Card Clothing from the coarsest size of wire to the finest, we feel well qualified to help you solve any of your carding problems. To be *sure* — specify TUFFER . . . made by our patented Tufferizing process giving you absolute precision and uniformity.

**HOWARD BROS. MFG. CO.** WORCESTER 8, MASSACHUSETTS

**Southern Plants:** Atlanta, Georgia and Gastonia, N. C. **Branch:** Philadelphia, Pa.

*Direct Representation in Canada*

**. . . IT PAYS TO SPECIFY TUFFER CARD CLOTHING**

Whether you're dyeing fabrics for suits

or draperies, for dresses or upholsteries,

you can use ALTCO on all rayons, mixed fabrics

and cottons with certainty because

# Superlitefast®

**direct dyes**

**are fastest to light, washing and resin finishes**

**ALTHOUSE**
*Chemical Company, Inc.*
READING, PENNSYLVANIA

*Pace-setter in precision dye-making*

# MAKE FINER, TIGHTER *Lace edgings*

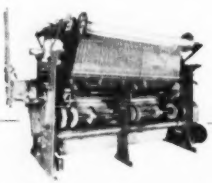
**Cut production costs, too.** With the *Kidde* Knitter five or six guide bars can be used to produce edgings of a quality much in demand today. Even on six guide bar work, production speeds of *160 courses per minute* or better are being maintained.

That rate of production is *substantially higher* than has ever been reached on this type of machine before—but it's *typical* of the high, *sustained* speeds attainable with the *Kidde* Knitter. Thanks to a new drum drive, a new motion on needle bars these speeds are possible—and the entire machine is designed to withstand them.

See for yourself how the *Kidde* Knitter is adaptable to practically any type of yarn, thread or elastic—how it is set up for simple or intricate patterns quickly and easily. We will be pleased to show you a machine in operation at our plant.

**Use the Kidde Knitter to make these fabrics, too**

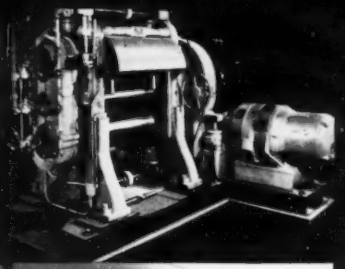
*Elastic Fabrics for corsets, girdles, brassieres. Dress Fabrics. Dish Cloth Materials. Curtains. Narrow Fabrics: edgings, braidings, laces. Shoe Cloth. Knitted Outerwear Fabrics for sweaters, polo shirts. Nets and veilings.*



**KIDDE MANUFACTURING CO., INC., BLOOMFIELD, N. J.**

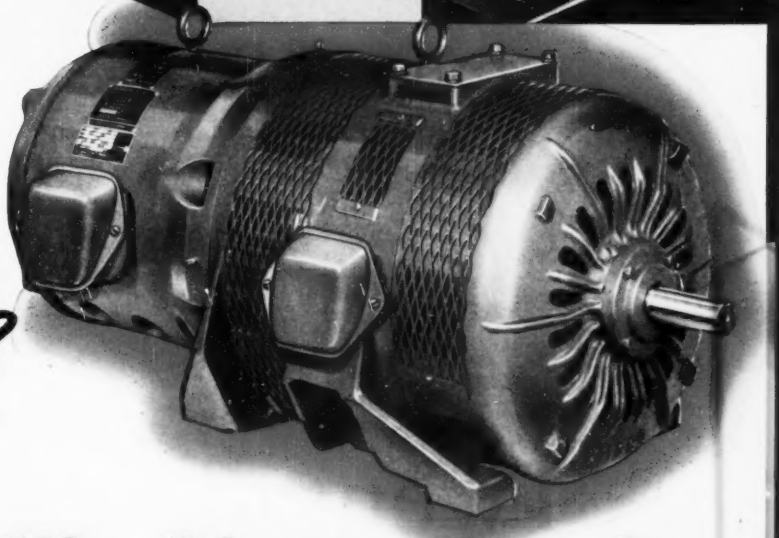
Ajusto-Spedes are used on the slitting and rewinding line in the metal fabricating industry.

Here, Ajusto-Spede is used on special calender roll in the rubber industry.



# Need stepless adjustable speeds with A.C. power?

Here's your answer



# Louis Allis Ajusto-Spede

Ajusto-Spede gives you a complete, packaged A.C. adjustable speed drive — 1 to 75 HP. To help you meet your specific design needs, it provides:

**1. Accurate Control!** The tachometer feedback circuit maintains close regulation over the entire speed range.

**2. Flexibility!** Many modifications are available: Eddy current brake, for fast, smooth braking. Torque limit control for controlled acceleration and overload protection. Threading, inching or jogging, and many other special control features. Speed ranges up to 17:1 available.

**3. Compactness!** Installation is simple — often the complete drive can be mounted on or inside the driven machine. Small electronic control panel and pushbutton station can be mounted at any convenient location.

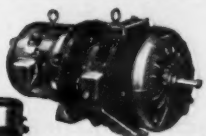
Typical Ajusto-Spede applications include printing presses, extruders, mixers, ironers, calender rolls, punch presses, etc. Investigate the advantages of applying Ajusto-Spede to *your* particular problem. Write for complete information or contact the Louis Allis District Office nearest you.

AS-101

**THE LOUIS ALLIS CO., *Milwaukee 7, Wisconsin***

We specialize in SPECIAL MOTORS

Extractor Motor with Integral Blower



Special Arbor Type Motor

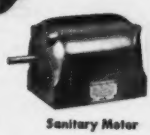
Splash-Proof Motor with Flange

Self-Cleaning Textile Motor

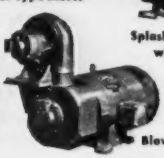
Gearmotor

Ajusto-Spede with Eddy Current Brake

Single Phase Pump Motor with Tripod Base



Sanitary Motor



Blower Ventilated Frequency Converter

Rolled Shell Shaftless Motor

Oil-Well Pumping Motor

**Standard or special — we build it. Whatever electrical or mechanical modifications or features you need, there is a Louis Allis motor that will do your toughest jobs better.**

**Question:**

# *In how many textile applications can Taylor controls help you cut costs?*

**Answer:**

# Twenty-five *(at least)*

It's true! 33 years ago Taylor was the first instrument manufacturer to get interested in the textile business. We introduced the first practical system of Slasher control in 1919. We've grown up with the industry and today we can offer you instrumentation that will save you money on practically any application in your mill from the first phase of processing to the last. Listed below are some of the time-proven Taylor control systems now available:

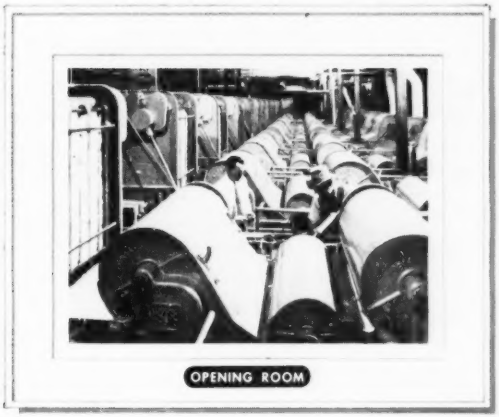
**SIZE COOKING**
**SIZE STORAGE KETTLE**
**SLASHING**
**KIER BLEACHING**
**CONTINUOUS BLEACHING**
**TENTERING**
**PIECE DYEING**
**PACKAGE DYEING**
**BEAM DYEING**
**FINISHING**
**MERCERIZING**
**SKEIN DYEING**
**TOP DYEING**
**JIG DYEING**
**WOOL SCOURING**
**CONTINUOUS DYEING**
**DRYING**
**CARBONIZING**
**WASHING**
**CONTINUOUS CRABBING**
**PADDING**
**DECATING**
**POWER PLANT**
**AIR CONDITIONING**
**CAKE SOAKING AND DRYING**

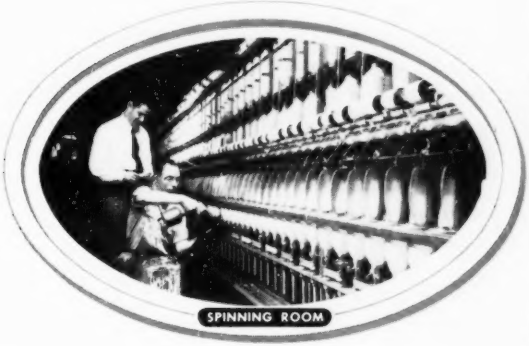
*Ask your Taylor Field Engineer! Or write Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.*

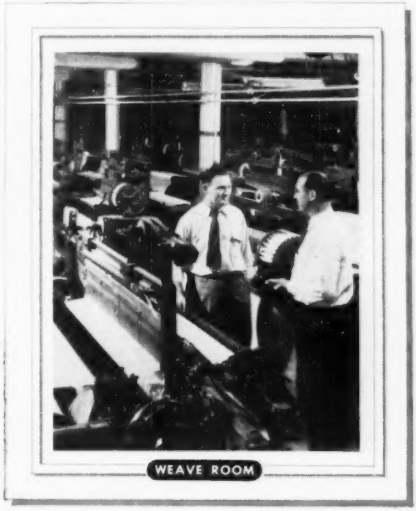
**TAYLOR INSTRUMENTS MEAN ACCURACY FIRST**

# *Gulf Periodic Consultation Service fits into the maintenance picture—*

## IN EVERY MILL DEPARTMENT



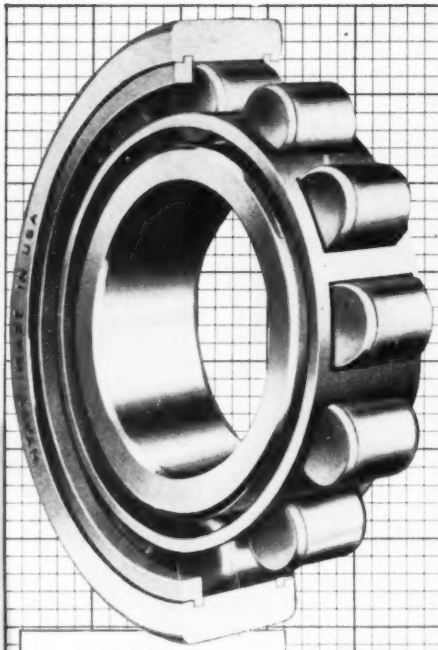



You'll find that through Gulf Periodic Consultation Service, Gulf Sales and Staff Engineers offer practical help on every phase of lubrication in every room in the mill. For further information on this co-operative service, write, wire, or phone your nearest Gulf office today.

**Gulf Oil Corporation • Gulf Refining Company**
**Pittsburgh 30, Pennsylvania**

GULF INDUSTRIAL LUBRICATION



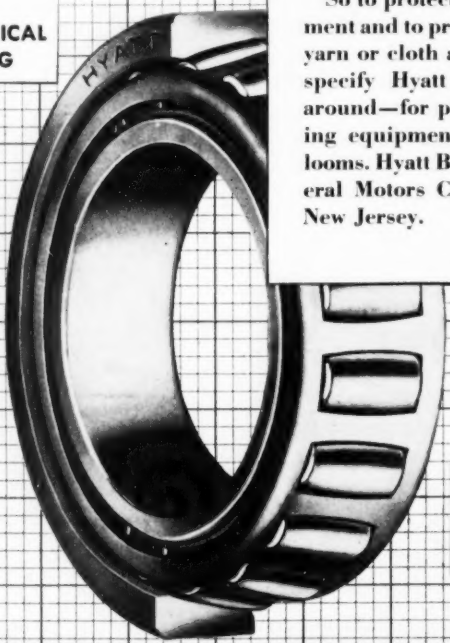
HYATT
STRAIGHT CYLINDRICAL
ROLLER BEARING

## Let HYATTS Help Protect Your Machine Investment

By reducing wear to a negligible minimum through the substitution of rolling motion for sliding friction, Hyatt Roller Bearings not only increase operating efficiency but also help lengthen the useful life of your equipment.

Applied in properly shielded housings to prevent oil leakage, these modern bearings save you money by reducing spoilage and at the same time effect other operating economies—including elimination of down time for machine repairs.

So to protect your machine investment and to produce more and better yarn or cloth at less cost, be sure to specify Hyatt Roller Bearings all around—for preparatory and finishing equipment as well as for your looms. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



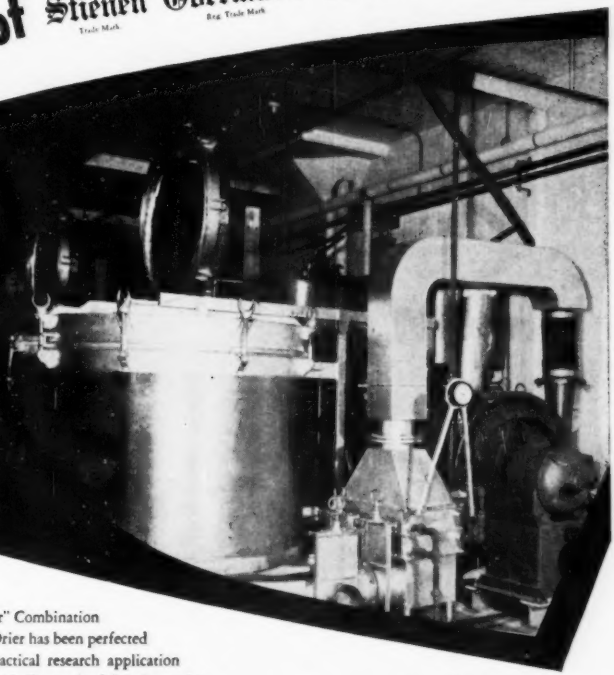

HYATT
SPHERANGULAR
ROLLER BEARING

**HYATT ROLLER BEARINGS**

# MORE PROOF of Stienen Obermaier leadership

## COMBINATION EXTRACTOR-DRIER*

Substantially reduces labor costs and cuts drying time in more than half.



The "Stienen-Obermaier" Combination High-Speed Extractor-Drier has been perfected after many years of practical research application and has been enthusiastically received by the entire trade. This new system of extracting and drying has cut the total drying time more than half over other systems and has proven a superior method to any other available for package drying. This Combination High-Speed Extractor-Drier can be utilized by even the smallest package dyer to great advantage.

The quick drying time means faster turnover of yarn in the dyehouse, eliminating bottlenecks, and cutting production time in half. This means half the required floor space and half the material carriers.

In actual operation, the material carrier is removed from the dyeing machine and placed in the extractor-drier. For average production, the entire operation is handled in this one machine requiring 1½ to 2 hours. For larger production, the same machine is used for extracting. Additional Port Driers are used to maintain the same high-speed drying results.

Submit your sample package to our laboratory and you shall receive exact data on your type of yarn.

**INSTALLED THRQUGHOUT THE WORLD**

**PROVEN**

**The only complete laboratory unit made for sample dyeing, extracting and drying.**

- **entirely electrically operated**
- **no steam required**

Stienen Obermaier — LEAD WITH THE

**Standard Fabricators**
INCORPORATED

355 Walton Avenue • New York 51, N. Y.

EXCLUSIVE SALES AGENTS OF OUR ASSOCIATES

Obermaier & Cie.
Neustadt Weinstrasse, Palatinate, Germany

*PAT. PEND.

# Is TEN YEARS permanent enough for you?

TAKE-UP ROLLS of TEXALOX roll covering, created expressly for the textile industry by CARBORUNDUM, have been on the job in many a mill—*in many cases running continuously for ten years without replacement or showing evidence of wear.*

TEXALOX covering outlasts rubber or cork—never gets slippery or gummy. It won't "shed", like sand or garnet paper covering. It can't rust, like perforated tin. It never loses its built-in ability to exert a firm, gentle grip on the fabric.

It also prevents chafe and cut marks—doesn't accumulate dirt or grease—doesn't loosen or wrinkle—is unaffected by moisture, dyes, oil and grease.

That's why it gives you a perfect, clean fabric—with complete assurance of delivery of definite lengths of material.

TEXALOX roll covering comes in handy 3-inch wide strips, and in a special surface for each type of textile, from the sheerest nylon to the heaviest duck. Try it on your looms now. We'll gladly send you a sample length, free of charge. Ask your CARBORUNDUM or distributor salesman—or write Dept. TI 82-63

# TEXALOX

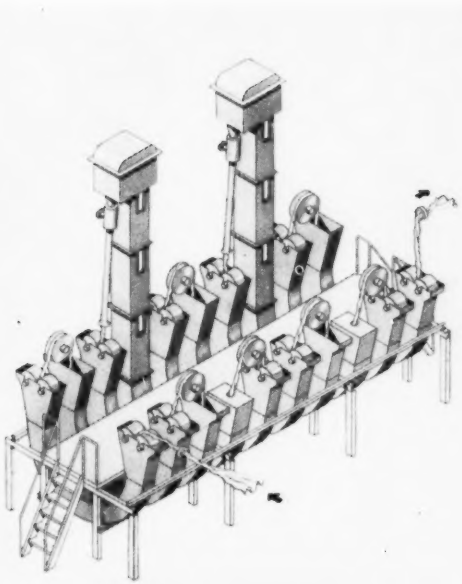
## sure-grip take-up roll covering by CARBORUNDUM

TRADE MARK

*"Carborundum" and "Texalox" are registered trademarks which indicate manufacture by The Carborundum Company, Niagara Falls, N. Y.*

32-63

# NOW! A NEW CONTINUOUS BLEACHING SYSTEM AT A NEW LOW COST!



## DU PONT CONTINUOUS PEROXIDE BLEACHING SYSTEM TYPE 1000

Capacity . . . . . 750 to 1500 lbs./hr.
Speed . . . . . to 100 yards/minute

**NOTE:** The equipment illustrated above, which can be used in the Type 1000 System, is designed and sold by H. W. Butterworth & Sons Co., Bethayres, Pa. Other manufacturers also supply equipment for this system.

**The Du Pont Type 1000 Continuous Bleaching System** is an all-new peroxide bleaching system based upon time-proven bleaching principles. Designed specifically for plants processing from 750 to 1500 lbs. of cloth per hour on a full-production or specialty basis, the new system employs a compact two-stage bleaching range which is basically simple in design and construction . . . can be installed and operated at a surprisingly low cost. Here are the benefits the new system can bring to your bleaching operations:

**NEW ECONOMY** . . . Bleaching equipment is priced so low that it can usually pay for itself within two years through reduced operating cost and increased production.

**NEW CAPACITY** . . . With a capacity of 750-1500 lbs. of cloth hr., the Type 1000 System meets the requirements of large mills for specialty work . . . is adequate for total production in many smaller mills. Cloth speed is up to 100 yds. minute. Goods in the 3-7 yds. lb. class can be handled.

**NEW EFFICIENCY** . . . The new system produces maximum yardage at lowest possible cost. Chemical and steam consumption are lowered by as much as 40%. One-man operation means exceptional savings in labor costs.

**NEW QUALITY** . . . Automatic operation permits close control of chemicals, steam and cloth speed. Because the system is continuous, every yard of cloth receives the same bleaching treatment for same length of time—resulting in finished goods of high uniformity and quality.

### SEND FOR THIS FREE BOOKLET!

It gives you complete information about the Type 1000 System . . . describes advantages, applications, steps of operation and equipment design. Send in the coupon below for your copy.

## DU PONT PEROXIDES
### *FOR TEXTILE BLEACHING*

Available in drums and tank cars: "Albone" 35 . . . Hydrogen Peroxide, 35%; "Albone" 50 . . . Hydrogen Peroxide, 50%

DU PONT

*150th Anniversary*

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department, Wilmington 98, Delaware

Please send me your new free booklet which completely describes the new Du Pont Type 1000 Bleaching System.

*Name*_____ *Position*_____

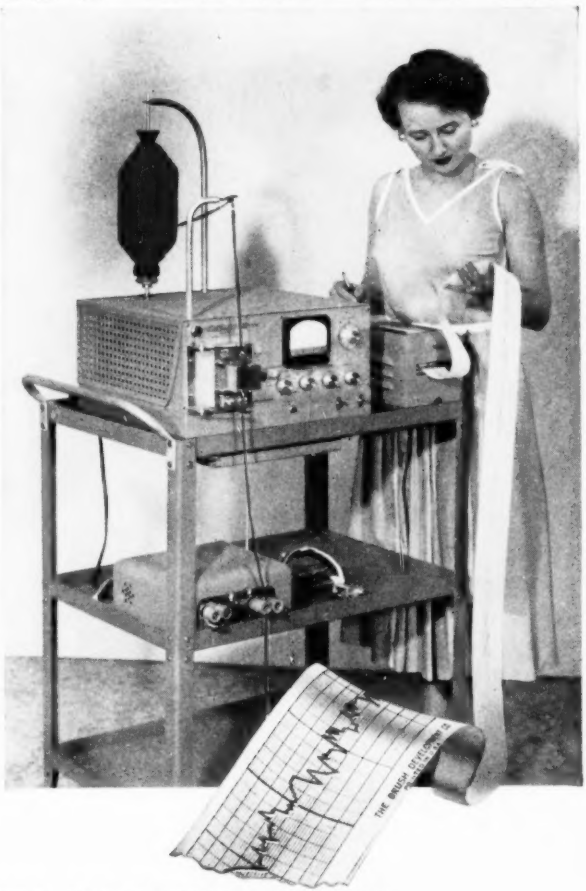
*Firm*_____

*Street & No.*_____

*City*_____ *State*_____

# GROWING DEMAND FOR UNIFORMITY ANALYZER

## brings new Brush "peak performance" service policy to Southeast!



• More and more mills are discovering the important benefits of the Uniformity Analyzer. To assure the peak performance and widest use of this instrument, The Brush Development Company and its Southeastern representatives W. A. Brown & Associates announce a new service policy for the states served by Brown.

This comprehensive policy provides a staff of textile-trained application engineers and service experts. These men will inspect Uniformity Analyzers periodically to make sure that these sensitive instruments are giving most accurate results. They will also assist users in interpreting and applying data to the mill's problems. In case of emergency, they will provide 24-hour service.

The new expanded policy applies to all new orders for Uniformity Analyzers in Southeastern states. It also will be available in the near future for existing installations in that area. In other regions, Brush technical assistance and service will be available as usual for all users of Uniformity Analyzers.

For full information, write The Brush Development Company, Dept. **T-37,** 3405 Perkins Avenue, Cleveland 14, Ohio.

### THESE ENGINEERS ARE AT YOUR SERVICE:

**ALEXANDRIA, VIRGINIA**
W. A. Brown
J. H. Chadwick
Charles C. Hulsey
3834 Mt. Vernon Avenue
Phone: Overlook 6100

**ATLANTA, GEORGIA**
B. S. Woodman
Allan Craft
1570 Northside Drive, N.W.
P. O. Box 1057
Phone: Vernon 5395

**CHARLOTTE, NORTH CAROLINA**
R. F. Allen
1319 Biltmore Drive
Phone: Charlotte 3-6468

**GREER, SOUTH CAROLINA**
W. L. Rooney
7 Memorial Drive

**TAMPA, FLORIDA**
Harley A. Clouse
4603 Tennyson Avenue
Phone: 87-5202

*Put it in writing with a Brush Recording Analyzer*

THE Brush DEVELOPMENT COMPANY

BRUSH

Piezoelectric Crystals and Ceramics
Magnetic Recording Equipment
Acoustic Devices
Ultrasonics
Industrial & Research Instruments

*Where You Find Fashionable Fabrics —*

*You'll Find*

# AHCOQUINONE®
## Fast Grey BBLW

Grey *can* be glamorous or it can be subtle . . . as many of today's high fashion fabrics demonstrate so beautifully. AHCOQUINONE® *Fast Grey BBLW*, one of the fastest members of the *Ahcoquinone* series, is a key factor in fashion shading of greys. Used with *Ahcoquinone* Violets, *Grey BBLW* provides a wide range of greys.

*Ahcoquinone Fast Grey BBLW* dyes exceptionally well on wool, worsted, nylon or acrylic fibres. It is also very suitable for shading of chrome dyes.

*Complete technical data and literature available on request*

**A member of the AHCOQUINONE® family of colors for wool and synthetics**

*Quality · Integrity*

*For vat, acid, direct dyes or auxiliary chemicals for all fibres and fabrics . . . see AHCO first!*

AHCO DYES

**ARNOLD, HOFFMAN**

PROVIDENCE • RHODE ISLAND

*Associated with Imperial Chemical Industries Ltd.*
*London, England*

ARNOLD, HOFFMAN & CO., INCORPORATED • EST. 1815 • PROVIDENCE, R. I.
Offices: Charlotte, Cincinnati, New York, Teterboro, Providence
Plants: Charlotte, N. C. • Cincinnati, Ohio • Dighton, Mass.

# What's U. S. Rubber doing with spooler sleeves?

Making them of Uscolite, the rubber plastic. This minimizes creel breaks on the warper, thereby preventing wild yarn and knots from occurring in the twister beams and slasher beams, saving time and work.

This remarkable material is exceptionally long-lived and has excellent resistance to chipping around the edges. Uscolite Spooler sleeves are available in both Type A and Type C sizes for Barber Colman spoolers—in 3 colors—blue, gray, brown.

U. S. Rubber's line of textile mill specialties is the largest and most extensive in the industry. The use of these textile specialties *reduces* cost, *increases* product quality. Write for full information without delay to address below.

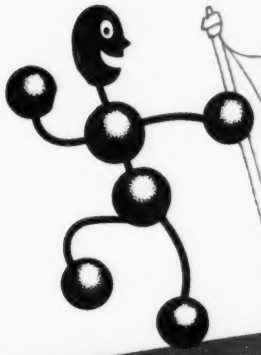
PRODUCT OF

U.S.RUBBER
SERVING THROUGH SCIENCE

**UNITED STATES RUBBER COMPANY**

MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

# WE'LL ALL BE THERE



*To tell you about our New Twitchell Worsted Oil and our "Balanced" Cotton Finishing Oils!*

**Booths 10-11**
**A.A.T.C.C.**
**Exposition**
**Hotel Statler, Boston**
**November 6-7-8**

Are you troubled with dry-weather static difficulties?

**Then be sure to come to Boston.**

Are you looking for more efficient finishing of Sanforized Fabrics?

**Then see us at the Hotel Statler, Nov. 6, 7, 8.**

Are you producing woolens; rayons and other synthetics?

**Then stop in at Booths 10-11 . . . and see our complete line of Twitchell Textile Oils, Fatty Acids and Vinyl Plasticizers!**

Emery

Fatty Acids & Derivatives
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EMERY INDUSTRIES, INC.
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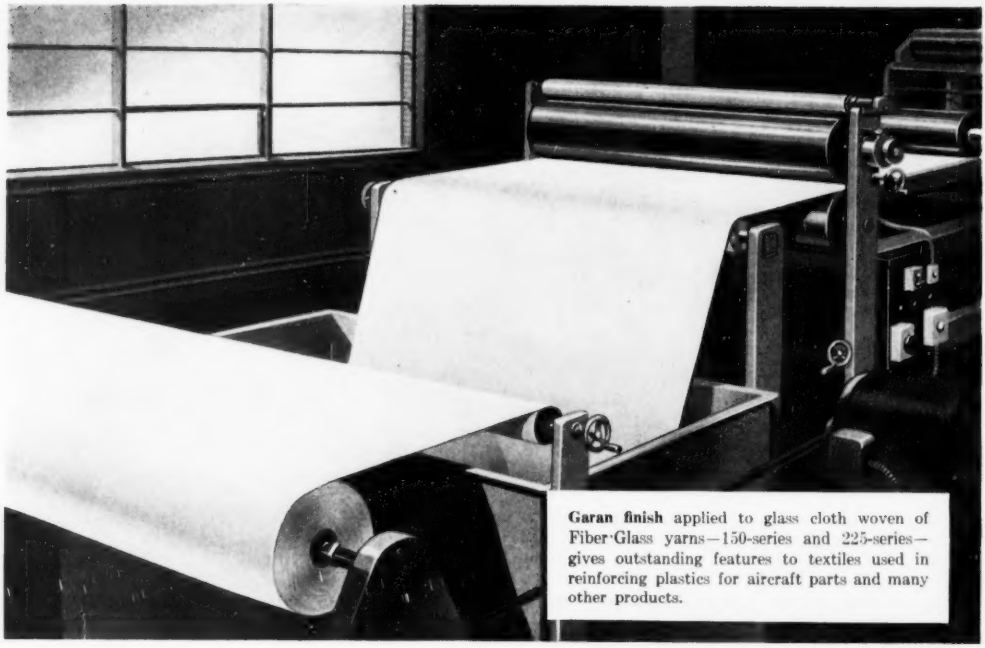
187 Perry St., Lowell, Mass.
*Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles*


*For further information use Handy Return Card, Page 230*



**Garan finish** applied to glass cloth woven of Fiber·Glass yarns—150-series and 225-series—gives outstanding features to textiles used in reinforcing plastics for aircraft parts and many other products.

# L·O·F Garan finish applied to glass fabrics at your plant

## This L·O·F technical service increases saleability of your textiles

ONLY Libbey·Owens·Ford brings you the Garan finishing service. This makes available to you the Garan finish and the technical service required to apply this finish to your glass fabrics.

The Garan finish, specified by many fabricators using glass cloth, gives your fabrics outstanding advantages for the reinforced plastics market. It imparts higher strength and increases the translucency of Fiber·Glass-reinforced plastics.

What's more, there is little or no loss in strength when these plastics are exposed to high humidities or immersed in water. In tests, laminates made with Garan-finished glass cloth showed a water absorption of about one half compared to other finishes which were tested.

Give your glass fabrics important sales advantages by having them treated with the Garan finish. L·O·F offers complete technical services to assure best results. Get in touch with the nearest L·O·F office (district offices in 26 major cities). Or write, wire or phone Libbey·Owens·Ford, Dept. F·G 18102, Nicholas Building, Toledo 3, Ohio.

L·O·F GLASS PLASKON L·O·F FIBER·GLASS

**LIBBEY·OWENS·FORD GLASS COMPANY**
**FIBER·GLASS DIVISION**

**FIBER·GLASS**

# level dyeing means smooth selling

...and it is only one of many† sales-producing properties imparted to fabrics by

## Cyanamid Textile Chemicals

DECERESOL® Wetting Agents
NO ODOROL® Finishing Oils
AQUASOL® Sulfonated Castor Oils
Softeners Penetrants
Sizing Compounds Soluble Waxes

NOW—*DECERESOL OT B, a rapidly dispersible powder. Special Technical Bulletin sent on request*

†others...
good hand
penetration
suppleness
improved sewing properties

**AMERICAN Cyanamid COMPANY**

INDUSTRIAL CHEMICALS DIVISION
30 Rockefeller Plaza, New York 20, N. Y.

IN CANADA: NORTH AMERICAN CYANAMID LIMITED, TORONTO AND MONTREAL

# Strobotac®

Price – Type 631-B Strobotac – $140.00
complete and ready for operation

★ *Ideal tachometer – no electrical or mechanical connections – no power taken from device whose speed is being measured*

★ *Inaccessible places can be readily reached for speed measurements or motion study – "stops" rotating, vibrating or reciprocating motion*

★ **Range** – *600 to 14,400 rpm direct reading. Can measure speeds up to 100,000 rpm. Type 631-BL measures from 60 to 1,440 rpm and up to 14,400*

★ **Accuracy** – *±1% of dial reading over most of range*

★ **Flash Duration** – *5 to 10 millionths of a second*

★ **Dimensions** – *$7\frac{1}{2}$ x $8\frac{3}{4}$ x $9\frac{7}{8}$ inches*

★ **Net Weight** – *$9\frac{1}{2}$ pounds*

★ **Accessories Supplied** – *Seven foot power cord, plug to fit contactor jack, and spare fuses.*

*Let us advise how the Strobotac can help you – write for complete information.*

## "Throwster's Watchdog"

The Burnsville, North Carolina Division of the Duplan Corporation – well-known processors and throwsters of yarns – have this to say about the G-R Strobotac:

*"A throwing machine's objective is to wind yarn uniformly and simultaneously on any desired number of spindles. This means that speeds, tensions, sizes and hardness of packages, twists and twist take-ups must all be the same. But such things as sluggishness of oil in spindle bolster, tightness of spindle spring pressure, or eccentricity of the spindle itself will cause irregularities in operating speeds. It is in keeping the throwster operating efficiently that the Strobotac has proven its value as a production tool.*

*Checking of spindle speeds, with the Strobotac, at regular intervals readily reveals substandard operation. In addition, crooked bobbins, improperly positioned, laced or broken fliers controlling yarn tensions and innumerable other defects may be quickly detected and repaired."*

The unique nature of stroboscopic light has ideally adapted it for use in the study of mechanical and electrical operations. The textile industry has been one which has benefited considerably from its use.

The Strobotac enables examination of any rotating, vibrating or reciprocating mechanism in "slow motion." Experience has shown that the Strobotac rapidly pays for itself in production time saved, improved quality and reduction in defective output.

*Photograph Courtesy Burnsville Division, The Duplan Corporation*

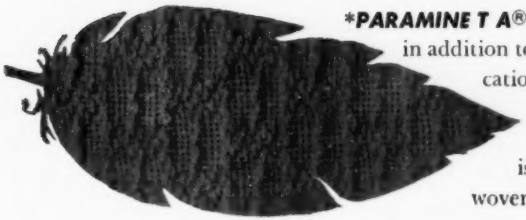
**GENERAL RADIO Company**

275 Massachusetts Avenue, Cambridge 39, Massachusetts, U. S. A.

90 West Street NEW YORK 6 · 920 S. Michigan Ave. CHICAGO 5 · 1000 N. Seward St. LOS ANGELES 38

# *PARAMINE T A®

*for durable softness and added sales appeal...*



***PARAMINE T A® produces a soft** [illegible] **yarn** in addition to a pleasing surface finish. An efficient cationic product, it imparts a durable, long-lasting, full hand to cotton and rayon fabrics, woolen cloth and hosiery. It is highly effective on all styles of woven and knitted goods, including tricot and glove fabrics.*

*PARAMINE T A*
*is excellent for finishing cotton goods, plain dyed and printed in combination with gums, starches and similar products. On prints of very open design and blotch work, it gives a more even hand from selvedge to selvedge, and a smooth feel unobtainable with ordinary softeners. Write for details.*

**Arkansas Co., Inc.**
**P. O. Box 210,**
**Newark, N. J.**

*Gentlemen:*
*Please send me, without obligation:*

- ☐ Full details on PARAMINE T A
- ☐ Sample and application procedure
- ☐ Details of mill demonstration

NAME _____ TITLE _____

FIRM NAME _____

ADDRESS _____

STATE _____

**Arkansas Co. INC.**

*MANUFACTURERS OF INDUSTRIAL CHEMICALS FOR OVER 45 YEARS*
*NEWARK, NEW JERSEY*

# MEON MAGIC

When you apply MEON to cotton at the wet twisting operation, using from 1% to 3% solution in water, you'll agree MEON really works magic.

## *Here's Why:*

### • INCREASED BREAK STRENGTH

*Since a considerable increase in BREAK STRENGTH can be obtained with MEON TREATMENT,* many mills have found it possible to start with a shorter staple cotton and still produce a product meeting the minimum BREAK requirement *which formerly required a more costly raw material.*

### • SETS THE STRETCH

MEON treatment is also an aid in maintaining the degree of elongation imparted to the yarn in processing, and produces *greater uniformity.*

**Learn how MEON will benefit you and write for full particulars today.**

BORNE SCRYMSER Since 1874

**Our Laboratory Facilities are always at your disposal**

### Other MEON Uses

- As an emulsion or size inhibitor and stabilizer when dissolved first in ½% to 1½% solutions with water before emulsifiable oils or size compounds are added.
- As a fibre lubricant and softener when 1½% solutions are applied in the amount of 1½% — 2% total volume, by weight, on cotton, rayon, wool, or other wastes before reworking.
- As a surface active agent when using 0.1% to 0.5% solutions in innumerable applications where rapid wetting and increased penetration is desired.
- MEON in solution is used in connection with the garnetting of hard thread waste (both cotton and synthetic). Application is generally after garnetting, and gives more drag to the short fibres produced and thus permits more efficient *carding and spinning.*

**BORNE, SCRYMSER COMPANY** ELIZABETH, N. J. • CHARLOTTE, N. C.

# Do You Spin or Twist?

## THEN YOU SURELY NEED

# HERR CONICAL RINGS

- **Stops Yarn Breakage**
- **Permits Heavier Doffs**
- **Keeps Yarn Cleaner**
- **Produces Smoother Yarn**

*Each textile fiber shown above presents wonderful opportunities — each has special characteristics and handles differently.*

Ask us how yarn tension uniformity is controlled with the Herr Conical Ring... How we reduce ends down... How controlled lubrication affects cleanliness.

You can adapt your equipment for any textile fiber or blend if you use Herr Conical Rings.

*Ask for help on your problem.*

Gentlemen:
Please send literature on Herr Conical Rings and Herr Flyers.
Name .....
Position .....
Company address .....
Our problem is .....

**HERR MANUFACTURING CO., INC.**
**310 FRANKLIN STREET, BUFFALO 2, NEW YORK**

# Don't Pass up the Profits in Real Striped Terrys

***This Free Bulletin Points The Way To A World Of New Sales Possibilities Via Model LT/SA***

Here's a new Supreme bulletin that gives you a closer look at Supreme's terrific multi-fabric sales-knitter, Model LT/SA.

The booklet shows you the amazing 4-color striped terry. It gives you a close-up of the "knitted-in" adjustable stitch construction that makes the fabric so fluffy and snag resistant. It describes the machine's versatility as a plain or striped terry knitter and tells you how it can be switched over, on the job, to knit the entire Supreme range of plain, patterned or striped jersey.

Included are illustrations of the knitting elements system and the general construction features plus production rates and weight and dimension specifications.

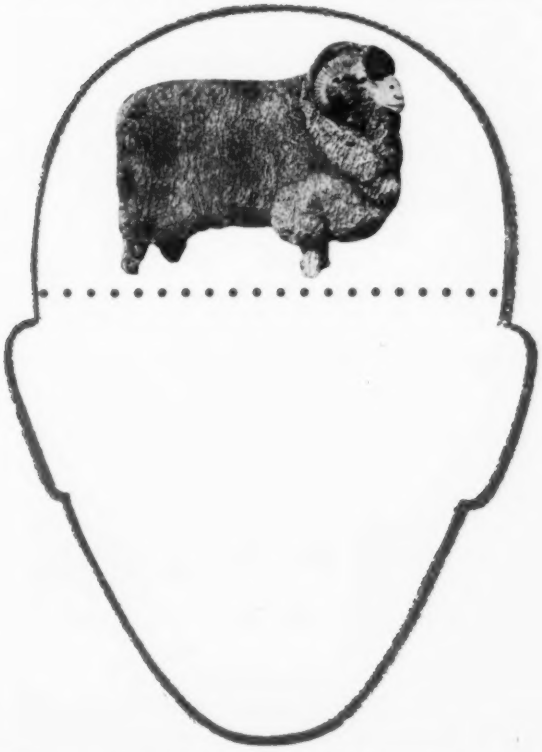
Write, on your company letterhead, for your free copy of the LT/SA booklet, today.

MEMO

*Get Supreme's New Booklet on Knitting Super-Loop Automatic-Striped Terry*

New!
SUPREME
"SUPER-LOOP"
MODEL LT/SA
VERSATILE, HIGH SPEED PRODUCER OF NEW-TYPE "SUPER-LOOP" PLAIN AND STRIPED TERRYS
SUPREME KNITTING MACHINE CO., INC.
SUPREME
KNITTING MACHINE CO., INC.
107 Johnson Ave., Brooklyn 6, New York, N. Y.
Southern Representative and Showroom:
The Malluck Co., 711 S. Tryon St., Charlotte, N. C.
SK-152

# when you think of wool ...

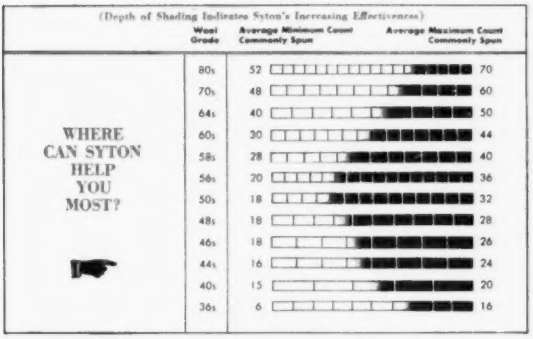


## think of

# SYTON

Woolen and worsted processing for civilian consumption is again at a high level. Competition is heavy . . . good reason why you should give some extra thought to Syton, Monsanto's silica sol for more efficient and profitable spinning.

Syton boosts the yarn strength of woolens and worsteds from 10 to 30%, depending upon the particular construction. Spinnability is further improved since, with Syton, you get fewer ends down . . . rounder woolen ropings with less apron pressure . . . finer counts from equal stocks . . . equal yarn strength with less twist.




**JUST AS EFFECTIVE ON BLENDS—**

Syton yields similar processing advantages when used in synthetic-wool blends. In addition, it helps control inter-fiber slippage by causing the smooth synthetic staple to behave more like a serrated wool fiber.

Syton: Reg. U. S. Pat. Off.

**ASK FOR NEW SYTON BOOKLET, JUST PUBLISHED**

MONSANTO CHEMICAL COMPANY,
Textile Chemicals Dept., Desk TIT-41
Everett Station, Boston 49, Mass.

Please send me new Syton booklet.

Name & Title _____

Company _____

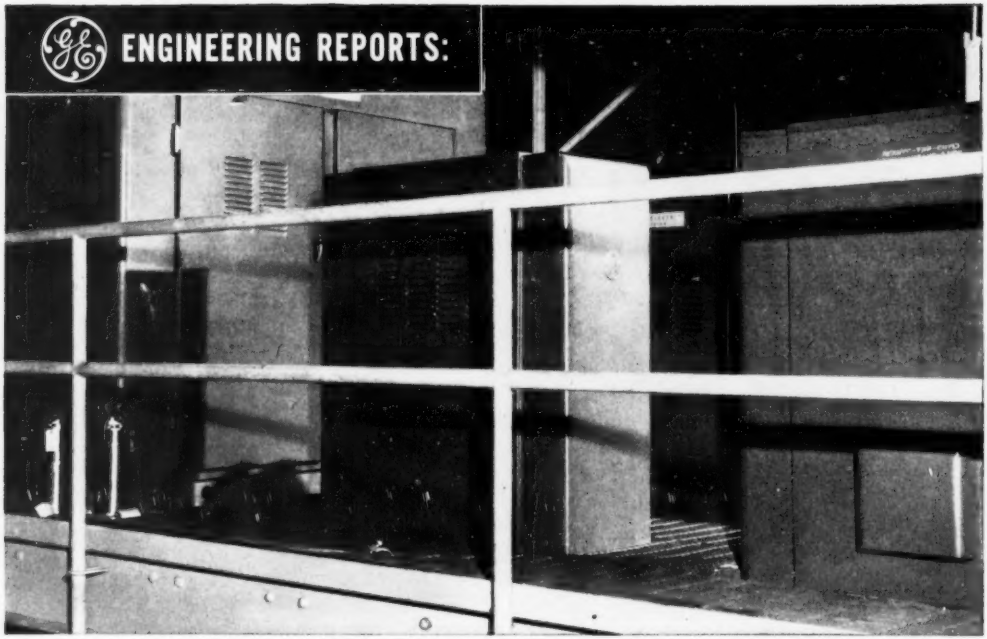
Address _____

City, Zone, State _____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

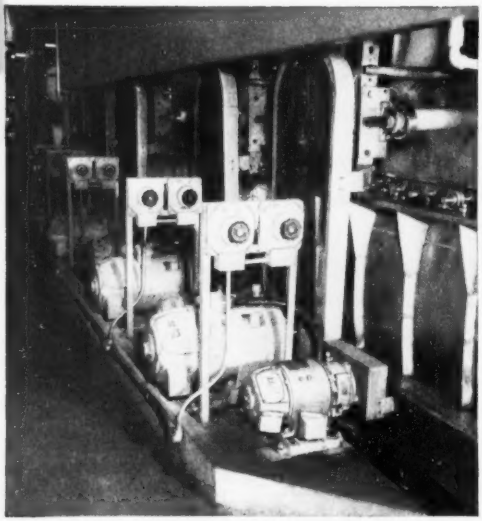
MONSANTO
CHEMICALS – PLASTICS

ENGINEERING REPORTS:

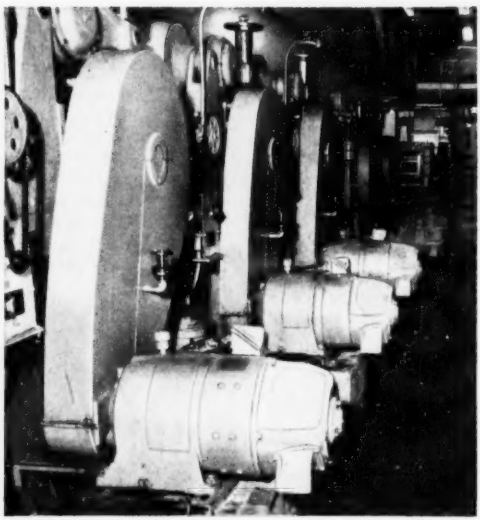


**EASY-TO-INSTALL** G-E Speed Variator power package can be located practically anywhere. At Delta Finishing Co., some are placed on a grid-floored balcony. Costly interwiring was eliminated—running in conduits was all that was needed.

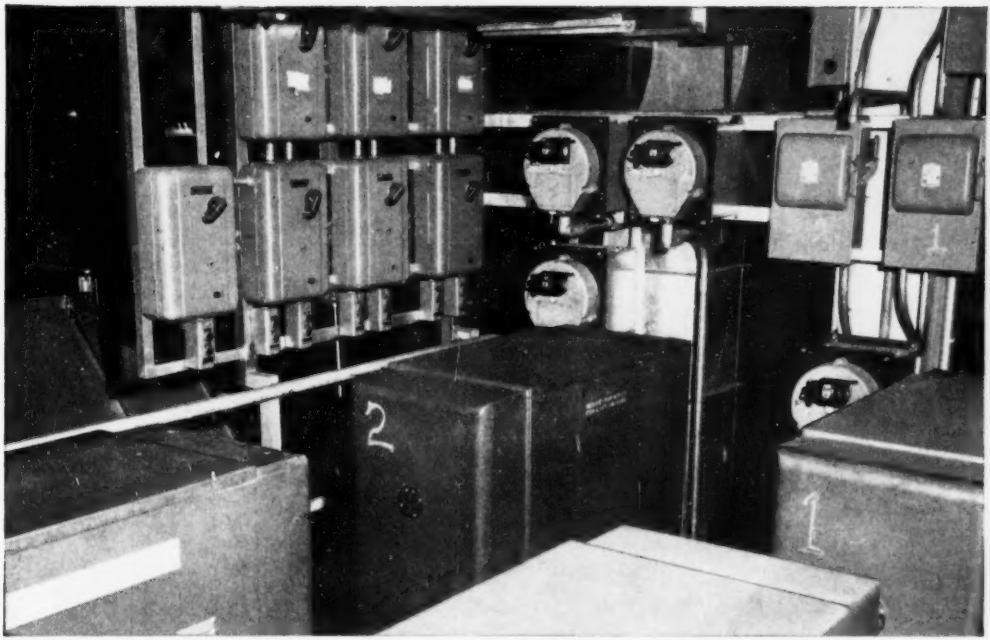
# New G-E packaged range drives



**PRECISE SPEED ADJUSTMENT** is provided in this scouring washer by individual G-E motor field rheostats.



**CAREFUL CO-ORDINATION** of four 10-hp G-E splashproof gear-motors keeps four-compartment washer in step.



**COMPACT** G-E Speed Variator power "packages" save floor space. The four units shown here contain all equipment necessary for powering several ranges at Delta Finishing. Note how compact design of units allows grouping in limited area.

# make plant layout more flexible

**P.S. FOR MANAGEMENT:** G.E.'s new "Progressive Mechanization" Program can help you develop and execute planned mechanization. For free manual GEA-5789, or showing of color film, contact your nearest G-E Apparatus Sales Representative.

## Compact Packaged Power units at Delta Finishing Co. save space, cut installation costs

At the Delta Finishing Co. plant in Wallace, S. C. (division of J. P. Stevens & Co., Inc.) the wide variety of range layouts needed makes General Electric packaged drives especially valuable.

A de-sizer, a ten-beam boil-off, a scouring washer, a loop dryer, and a mercerizer washer, among others, are accurately co-ordinated by these adaptable multi-motor systems. Each drive frees important floor space—power units combine motor-generator set, exciter and control panel in single, compact "packages." No special foundation is needed. Units can be located anywhere.

Costs are lowered, too. Power units are mass-produced from standardized parts. Installation or relocation is simple—just set up the power "package," run in the conduit. Range layouts can be changed easily and quickly.

To learn more about range drives that give all the advantages of d-c speed control, *plus* the advantages of drive "packaging," call in your G-E textile-mill representative. General Electric Co., Schenectady, N.Y. 654-24

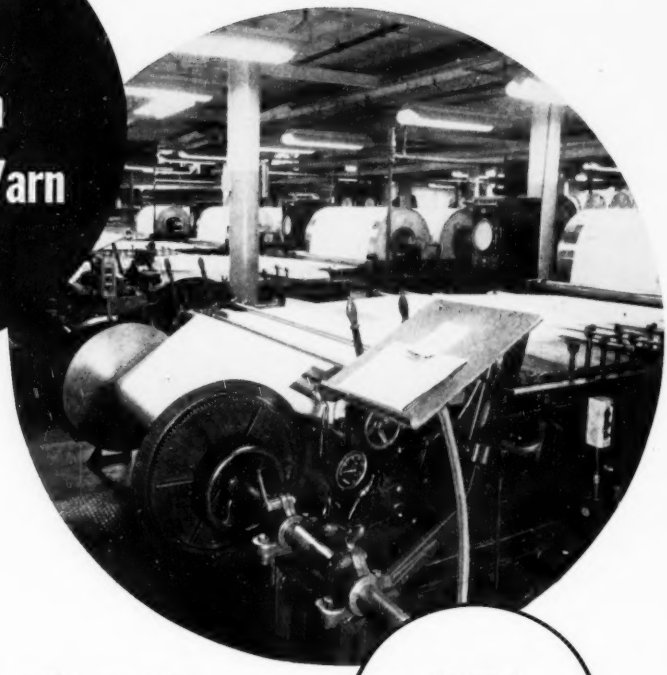
**Engineered Electrical Systems for Textile Mills**

**GENERAL ELECTRIC**



*For further information use Handy Return Card, Page 230*

# Maximum Production on Any Type Yarn



Battery of Cocker Slashers in a Southern Mill

This battery of Cocker slashers is used to run cotton, filament, and spun yarns and is giving the same efficiency and maximum production on all three yarns. These machines are complete with the latest Cocker improvements, permitting operation at high speeds with minimum down-time. Some of these features are:

Finger-tip control of tension on yarn.

Patented Automatic Friction Control, permitting operation at high speed without heating or friction.

Graduated drive, permitting going from high speed to crawl speed without overrun of beams, and from crawl speed to high speed without strain or jerk on the yarn.

Instant speed changes to 90 yards per minute.

THE LEADER COCKER AROUND THE WORLD

**Machine and Foundry Co., Gastonia, N. C.**

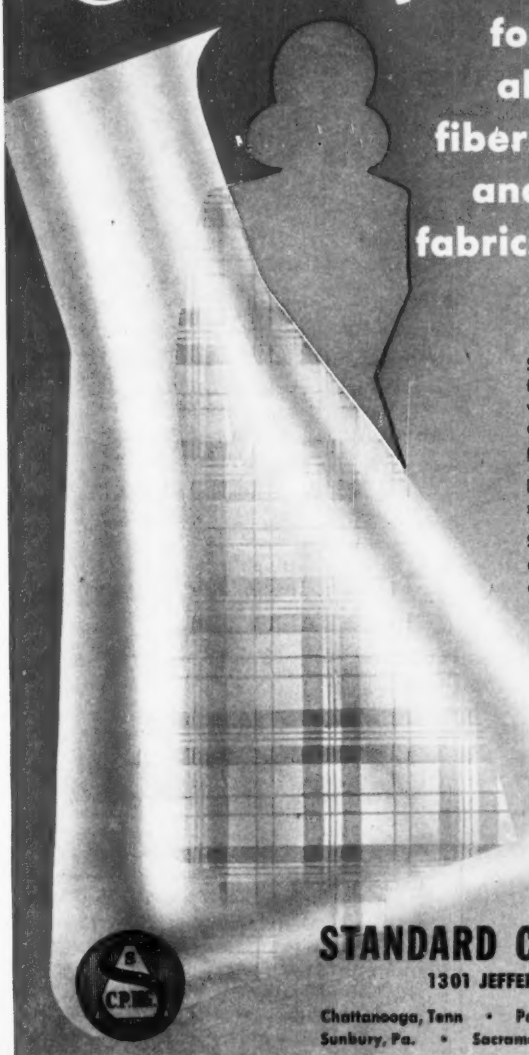
**WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT**



*For further information use Handy Return Card, Page 230*

# Standard's quality products

for all fibers and fabrics



**PYROTEX** — For scouring and dyeing Wool, Worsted, Cotton, Acetate, Rayon and Nylon. Neutral, effective under acid, alkaline and hard water conditions.

**STANTEOSINE** — Substantive softener for Acetate, Rayon, Cotton, Worsted, Wool. Minimum effect on shade and light fastness of dyed fabrics. Anti-static properties.

**STANDAFINS*** — Durable and semi-durable finishes imparting a full range of body, hand and drape to all fabrics; non-slip finishes; snag-resistant finish for hosiery; ribbon finish.

**STANDAPOLS*** — Quality sulfonated oils for finishing, softening, throwing, sizing and emulsifying; anti-static agents.

**STANTEX* OILS FOR YARNS AND STAPLE** — Suitable for all fibers in coning, winding, twisting, spinning, weaving, knitting, etc. Characterized by high lubricity, excellent stability and scourability and good anti-static properties.

**RETARDINE*** — For level dyeing and stripping of vat, sulfur and direct colors.

**STANTEX* PENETRATORS** — For fast, efficient wetting and surface reducing action in dyeing and finishing of all yarns and fabrics.

**SANFOROLS** — For efficient wetting and rewetting and softening properties in preshrinking processes. No gumming of shoes or odor development.

**SOLIDINA** — For improving fastness to washing and crocking of direct colors.

**MOYTOL** — Penetrant for dyeing, fulling, carbonizing, mercerizing, finishing and sizing. Effective in acid, alkaline and salt solutions.

*Reg. U. S. Pat. Off.

## STANDARD CHEMICAL PRODUCTS, Inc.

**1301 JEFFERSON STREET, HOBOKEN, NEW JERSEY**

Chattanooga, Tenn • Paterson, N. J. • Providence, R. I. • Salisbury, N. C.
Sunbury, Pa. • Sacramento, Cal. • Greensboro, N. C. • Leaksville, N. C.

PROCTER & GAMBLE

# PROXOL

MADE IN U.S.A.

## ALWAYS GIVES MORE THAN YOU EXPECT!

● Proxol and Proxol-T can do some surprising things to help you turn out salable goods. As many a processor has told us, Proxol's performance always proves to be better than expected.

Take Proxol's "built-in" lubricating value, for example. You can't beat it! Or Proxol's ability to insure maximum yarn strength, with fewer ends down. Or its scouring ease . . . and economy.

Of course, there's nothing quite like first-hand knowledge to show what a product can do for *you*. And that's a simple matter to arrange . . . a word to the Procter & Gamble textile man in your territory will do it.

*Proxol-the oil that smooths out your Processing Wrinkles*

*Procter & Gamble*

TEXTILE FINISHES SALES DEPARTMENT

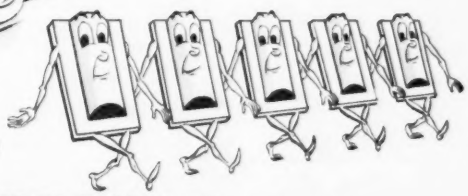
CINCINNATI, OHIO

# ERIEZ MAGNETIC ATTRACTIONS

MR. T.I.

ERIEZ MANUFACTURING CO., ERIE, PA., U.S.A. • PRODUCERS OF MAGNETIC SEPARATORS

**A MAGNETIC TRIPLE PLAY** is made by seven Burton-Dixie plants with 61 *ERIEZ* Spiked Apron Magnets. Machinery damage, product contamination and fire... all out! Play safe and protect cards and garnetts from damage... you'll score more profits, more production and less maintenance with *ERIEZ* Factory Mutual approved magnets on the job.



**TO KEEP IN STEP** with the most modern developments in the textile industry... that's why the 70-year old Exposition Cotton Mills Co. of Atlanta, Georgia, in its big new expansion program, purchased *ERIEZ* plate-type ATOMagnets for all opener lines. Installed between the distributor aprons and horizontal superior cleaners, the non-electric magnets prevent fires, machinery damage, and product contamination!

**MAGNETIC PROTECTION FOR YOUR TEXTILE PRODUCTS!** This is the subject of a new 6-page bulletin offered by *ERIEZ* Manufacturing Co. It is complete with descriptions and installation drawings of all *ERIEZ* magnetic equipment in cotton, wool and waste applications. If you are troubled with tramp iron, this brochure will tell you how to catch it and save money. Use coupon at right

ERIEZ Manufacturing Company, 1501 E. 12th St., Erie, Pa.

My Contamination or Separation Problem is: _____

_____

Please Send Me the *FREE* Textile Bulletin

Name _____ Title _____

Company Name _____

Street _____

City _____ Zone _____ State _____ 52-J

"ALL I KNOW IS HE SAID HE WAS GOING TO TEST THAT NEW VAT OF SIZE."

SEYCO can make your yarns as stiff as a board, as soft as a kitten, as tough as a marine sergeant.

WHAT'S YOUR PROBLEM?

Call the SEYCO man. His experience and the SEYCO laboratories are at your service without obligation.

## SEYCO Products

**WARP SIZING**
- Softeners
- Binders
- Penetrants
- Ty-In Penetrants
- Shuttle Dressing

**WET PROCESSING CHEMICALS AND AUXILIARIES**
- Dye Assistants
- Penetrants
- Rewetting Agents
- Sanforized Fabric Oils
- Detergents
- Scouring Agents
- Softeners

**NIAGARA TWIST-SETTER**
- Yarn Conditioning Penetrants

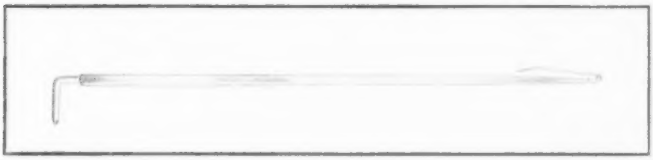
**HEADQUARTERS FOR TEXTILE CHEMICALS**

**SEYDEL-WOOLLEY & CO.**
**TEXTILE CHEMICALS**
748 RICE STREET • ATLANTA, GA.

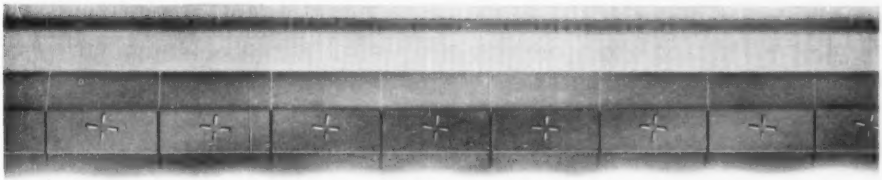
SEYCO

PENETRANTS • SIZING • SHUTTLE DRESSING • SOFTENERS • ALKALIS
• TWIST SETTER MACHINES •

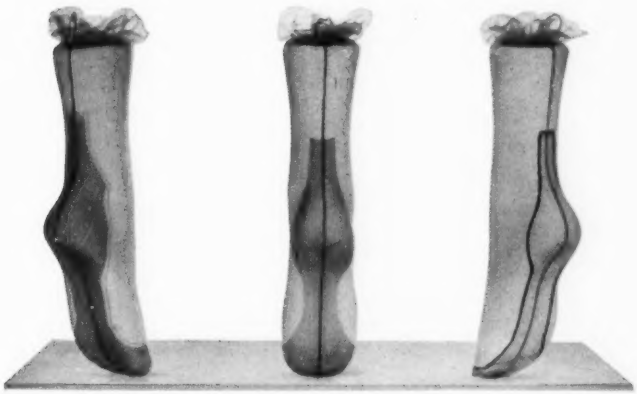
# the better the temper



# the longer the service



# ...the finer the product



And we might add . . . *the lower the cost!*

For quality needles contribute directly to lower costs in several important ways: rejects and second-run merchandise are sharply reduced; down time for adjustment and needle replacement is cut; production proceeds with less interruption. That's why leading mills prefer TORRINGTON NEEDLES.

**THE TORRINGTON COMPANY, Torrington, Conn., U. S. A.**

*Established 1866*

*Branches:* New York • Philadelphia • Chicago • Greensboro, N. C. • Boston • St. Louis • Bedford, P. Q. — Toronto, Canada • *Pacific Coast Representative:* E. G. Paules, 1762 West Vernon Ave., Los Angeles 37, Calif. Broadgate House, 7-10 Eldon St., London E. C. 2, England.

**TORRINGTON**

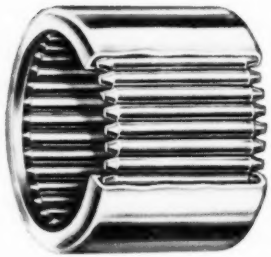
SPRING BEARD NEEDLES • SINKERS • DIVIDERS • SPLIT DIVIDERS

# when high speed's a must...

*Torrington Needle Bearings* are used in many high speed applications and operate smoothly and efficiently at 5,000 . . . 10,000 . . . even 15,000 rpm.

Careful design and precision workmanship give Needle Bearings a low coefficient of friction. And the full complement of small diameter rollers constantly maintains a thin film of lubricant on all bearing contact surfaces. Result: smooth performance, high radial load capacity and long service life at continuous or intermittent high speeds.

So if high speed is a "must" in your product, ask a Torrington engineer to help you get it, along with other Needle Bearing advantages such as compact size, light weight and ease of assembly.



THE TORRINGTON COMPANY
Torrington, Conn. South Bend 21, Ind.
*District Offices and Distributors in Principal Cities of United States and Canada*

**TORRINGTON** *NEEDLE* **BEARINGS**

Needle • Spherical Roller • Tapered Roller • Straight Roller • Ball • Needle Rollers

Milady's whims may be as changeable as the weather. Her desire for hosiery style or shade may vary with the wind. But one factor never changes: her hosiery must be beautiful . . . smoky-dull, luxuriously soft, cobwebby-sheer . . . smooth . . . alluring. And, because makers of fine stockings know that DURA BEAU Finish can always be depended upon to assure these vital qualities, it has been, for decades, the preferred hosiery finish! Yes, more stockings are DURA BEAU Finished than all others combined . . . stockings more DURAble—more BEAUtiful!

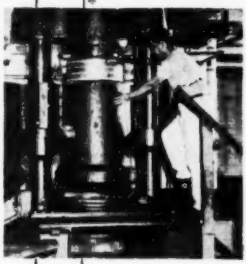
**DuraBeau** TEXTILE FINISHES

Reg. U.S.A. and CANADA

SCHOLLER LABORATORIES and practical field men are at your service everywhere, anytime to help you with your technical finishing problems. Write, wire or phone.

**SCHOLLER BROS., INC. • Manufacturers of Soaps, Softeners, Sulfonated Oils and Finishes • Collins & Westmoreland Sts., Phila. 34, Pa.**
IN CANADA: SCHOLLER BROS., LTD., ST. CATHARINES, ONTARIO

Custom Made TO FIT YOUR NEEDS



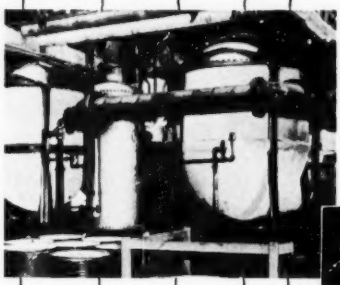
# Water Soluble Gums

## TRAGACANTH—ARABIC—KARAYA

Whatever your requirements are for gums . . . solution, whole, granulated or powdered . . . Jacques Wolf & Co. can meet your needs. We have over 40 years' experience in direct importation, processing and supplying the textile and allied industries.

Along with Tragacanth, Arabic, and Karaya we can also supply Irish Moss, Locust Bean and Gum Shiraz in any form. If desired we can furnish these gums from our ample stocks, undiluted, unblended and in original packages.

We would welcome the opportunity of submitting samples to meet your requirements.



JACQUES WOLF & CO. Chemicals PASSAIC, N. J.

50th ANNIVERSARY

PLANTS: Carlstadt, N. J. | Clifton, N. J. | Los Angeles, Calif.

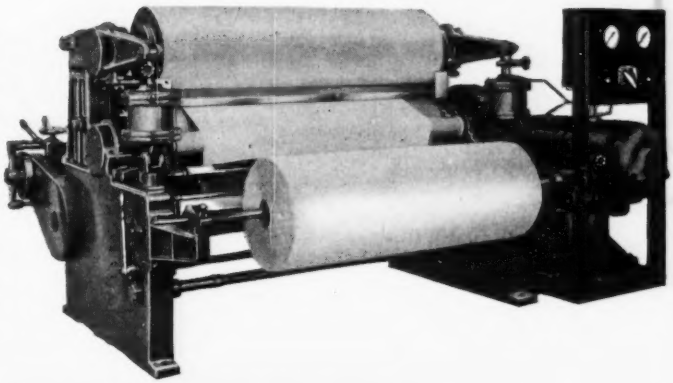
*An Informative Booklet "THE STORY OF WATER SOLUBLE GUMS" is yours for the asking*

# A GRAND OLD CHAMPION

**John L. Sullivan, America's first world champion fighter, held his title for many years solely on his natural strength and ability to take punishment. Today he is known as "The Last of the Gladiators" because his style of fighting doesn't win championships against fast stepping and hard hitting boxers.**

**Almost every processing plant has a few old machines — champs in their day — that should be retired and replaced with modern equipment. How about padders? Van Vlaanderen has developed a superior Heavy Duty Padder and Resin Impregnator. Massively constructed and having many modern design improvements, this machine is built in every way to the Van Vlaanderen standard for greater production and finer quality of finished goods.**

**John Lawrence Sullivan (1858-1918) won his first fight at 19 from a carnival strong man. He was champion of the world from 1880 to 1892, when he was defeated by James J. Corbett.**



***This is a good time to study your dye house equipment with a critical eye. Why not ask our engineers to make suggestions for improvements?***

# VAN VLAANDEREN MACHINE COMPANY

**370 Straight Street, • Paterson 3, New Jersey**

***Cable address: Vlaanderen, Patersonnj, U.S.A.***

**Southern Representative: Parrott and Ballentine**

**510 South Carolina National Bank Building • Greenville, South Carolina**

**WORLD'S LARGEST MANUFACTURER OF MACHINES FOR PROCESSING MODERN FABRICS**

# A bookful of moneysaving ideas for cotton and rayon men

Could you use ideas on cutting costs and improving your operations? This new free Westinghouse book is full of them. Here are a few examples.

***NO MORE LINT PROBLEMS***

You can end lint problems in your motors and controls—right now. Lint blows right through the Westinghouse Lint-Free Motor so it can't cause trouble. And Westinghouse Lint-Tight Starters have special enclosures so that the lint can't get in to create a fire hazard. These motors and controls are available in a complete range of sizes and models to handle any problem in your mill.

***IMPROVED SLASHING***

This book covers many specially engineered drives. For example, the famous Westinghouse multi-motor slasher drive which provides constant warp tension and results in more uniform beams. There's no jerky clutch operation. This permits higher slasher speeds and reduces maintenance. You save money and get better beams.

***BIG WEAVE-ROOM SAVINGS***

Installing the new Westinghouse loom motors is one of the biggest improvements a mill can make. These motors need no lubrication so you save all that trouble and expense. They save on power and they drive the looms smoothly because of a precise combination of the right torque and flywheel effect.

***BETTER FINISHING***

If you operate a finishing plant you can get much better control of the operations with new Westinghouse drives. On bleaching, dyeing and mercerizing ranges, for example, Westinghouse adjustable voltage drives give you high production with simple operation and excellent flexibility.

***CALL WESTINGHOUSE ON YOUR NEXT PROJECT***

These are just a few of the savings outlined in this book. Write for your copy right now. And whenever you're planning *any* new mill project, be sure to call your Westinghouse office early.

***WRITE FOR B-4799*** . . . "Electrical Equipment for Cotton & Rayon Mills". Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-94915

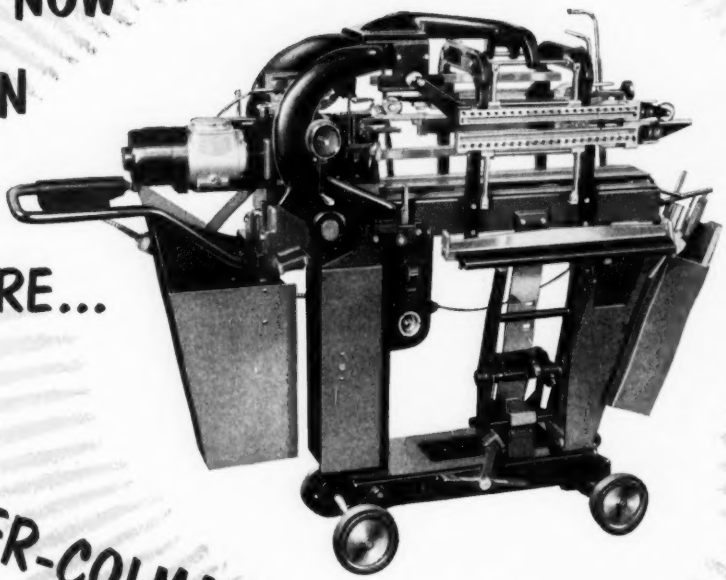
YOU CAN BE **SURE**... IF IT'S

**Westinghouse**

**EQUIPMENT FOR TEXTILE PRODUCTION**

***They did what you can do to reduce costs***

# BOTH NOW AND IN THE FUTURE...



# BARBER-COLMAN PORTABLE WARP TYING MACHINES WILL BE VALUABLE

## ...and here is why:

Barber-Colman Company has been well acquainted with the needs of the textile industry now for over half a century. The outstanding performance of Barber-Colman machines is well recognized. Barber-Colman branch offices provide close personal contact in the principal mill areas. Barber-Colman repair parts and maintenance service has made a name for itself that insures maximum life and operating efficiency for all Barber-Colman machines. The Company is steadily expanding its manufacturing plant, establishing the organization ever more firmly for continued superior performance of its products, and continued top-notch service, far into the future. Thus Barber-Colman offers you the certainty of continuing high value.

**AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • DRAWING-IN MACHINES**

**BARBER-COLMAN COMPANY**

ROCKFORD • ILLINOIS • U. S. A.

FRAMINGHAM, MASS., U. S. A. GREENVILLE, S. C., U. S. A. MANCHESTER, ENGLAND MUNICH, GERMANY

Photographs taken in 1/20,000 second on a Draper X2 Loom at 175 picks per minute. G&K Endless Check Straps are made of selected Hairitan leather (hair-on or hair-off) folded double and cemented. They have low permanent stretch and amazing tensile strength. Available for Draper Looms in 15 sizes from 7" to 10½" gauge.

*Split-second follow thru*

CUT SHUTTLE COST
(No hot spurs)
STOP KINKY FILLING
(No shuttle-bounce)
REDUCE BANG-OFF
(Perfect boxing)
INCREASE PROFITS

CATALOG presents the complete line of Textile Leathers for weaving — also aprons and tapes for the woolen and worsted industry. Ask for a copy on your letterhead.

## G&K Hairitan® Leather Endless Check Strap cushions the stick—prevents shuttle bounce

Notice how the G&K Hairitan Endless Check Strap — gliding through *two* sets of fingers beneath the box — rides with the picker stick to the end of the lay. This is smooth, positive *follow-thru* checking action. The strap conforms to the angle of the stick and holds it straight and true. The stick comes to rest gently and evenly, *without bouncing the shuttle.*

Follow thru with Orange Line Loom Leathers. More than 50 various loom leathers are available to help loom tenders get more yardage with less waste and down-time.

second century G and K Orange® Line **Textile Leathers**

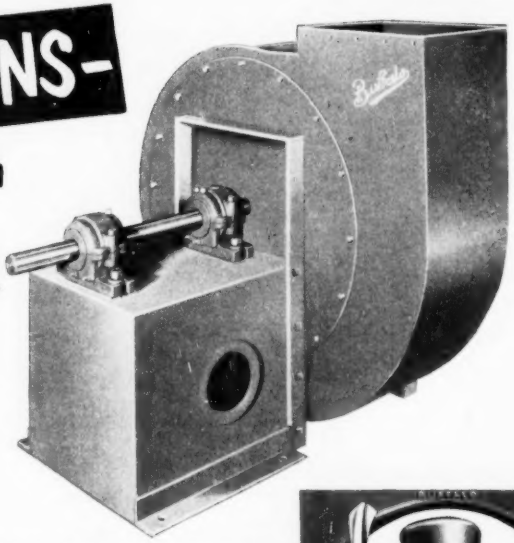
**GRATON & KNIGHT COMPANY, Worcester 4, Mass.** GRATON AND KNIGHT DIXIE **DIXIE LEATHER CORPORATION, Affiliate, Albany, Ga.**

"Buffalo"

*Tips on Getting the Best Service from your* **Fans**

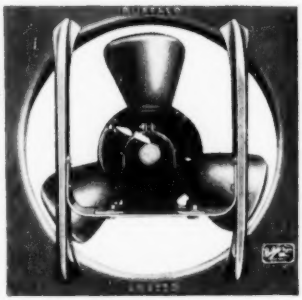
# 3 Types of FANS—

## and what each can do for YOU



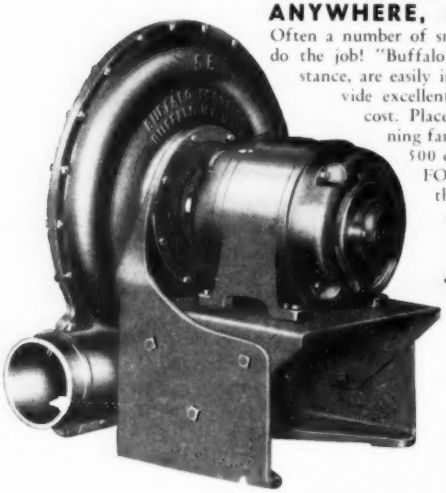
**FOR MATERIAL CONVEYING—FOR HEAVY DUTY EXHAUST**

"Buffalo" Industrial Exhausters are built for the specialized "workhorse" jobs of exhausting and pneumatic conveying. Heavy steel plate, with all joints welded for maximum strength and minimum weight. Rivet-free interior surfaces plus specially shaped blades mean high efficiency. Pick the right fan for your job, and save money. WRITE FOR BULLETIN 3576 for all the facts on "Buffalo" Industrial Exhausters.



**FOR LOCAL VENTILATION ANYWHERE, AT LOW COST**

Often a number of small, inexpensive fans will do the job! "Buffalo" BREEZO Fans, for instance, are easily installed in walls, and provide excellent ventilation at negligible cost. Place these rugged, quiet-running fans wherever needed. 6 sizes, 500 cfm to 5500 cfm. WRITE FOR BULLETIN 3222-F for the facts on BREEZO and other "Buffalo" Disk Fans for top performance.



**FOR FURNACE BLOWING—FOR GAS LINE BOOSTING—CLEANING OPERATIONS**

Still another type of work fan, the "Buffalo" "E" Blower-Exhauster is efficient on moderate pressure jobs—supplying air to small furnaces, cleaning tools, etc. Note how compact this one-piece unit is. It is inexpensive to install and easy to maintain. BULLETIN 3014-C gives ratings and information on all models. Write for your copy and be sure of picking the best fan for economy and long life.

DIAMOND JUBILEE 75TH ANNIVERSARY

"Buffalo" FIRST FOR FANS

## BUFFALO FORGE COMPANY

175 MORTIMER ST. BUFFALO, NEW YORK

*PUBLISHERS OF "FAN ENGINEERING" HANDBOOK*

Canadian Blower & Forge Co., Ltd., Kitchener, Ont. Sales Representatives in all Principal Cities

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| VENTILATING | PRESSURE BLOWING AIR CLEANING | COOLING AIR TEMPERING | HEATING INDUCED DRAFT | FORCED DRAFT EXHAUSTING |

ready to use

# RAPIDOGENS

**RAPIDOGENS are stable ready to use compositions of Naphtols and diazotized bases selected for best properties, shades and maximum efficiency.**

**uses:** for printing fast, brilliant colors on cotton, rayon and linen.

**color range:** an extensive range of shades of outstanding clarity and depth—many important shades are exclusively G.D.C.

**fastness:** excellent fastness to washing—good fastness to light.

**powders and solutions:** both forms are available.

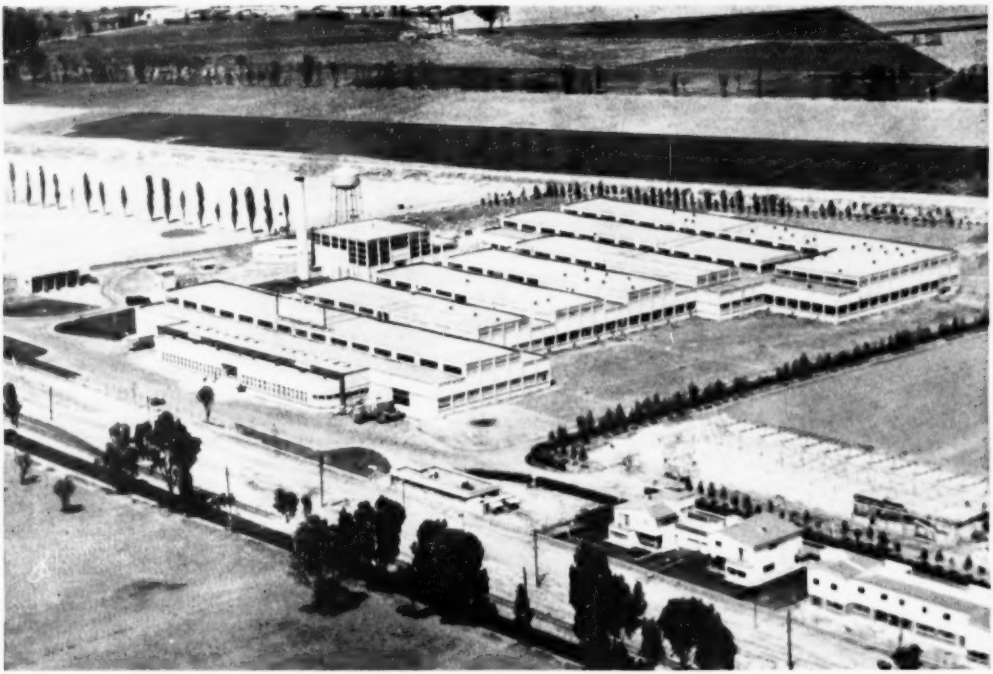
**application:** develop rapidly in acid ager—many can be developed in neutral ager—the "FF" (fast fixing) types are completely coupled in a one minute acid ageing.

**versatility:** can be printed alongside Indanthrenes, Algosols and pigments.

**economy:** combine quality with ease of application and maximum yield. NO CRITICAL COMPOUNDING IS REQUIRED.

**GENERAL DYESTUFF CORPORATION**
435 HUDSON STREET • NEW YORK 14, NEW YORK
BOSTON • CHARLOTTE • CHICAGO • PHILADELPHIA • PORTLAND, ORE. • PROVIDENCE • SAN FRANCISCO

# A Lockwood Greene Project



Large new textile finishing plant near Mexico City for Acabados, Mexico, S. A.

## A RECORD OF SERVICE IN FINISHING PLANTS as measured by:

| | |
|---|---|
| **New Plants** | **71** |
| **Major Additions** | **100** |
| **Minor Additions, Reports, Appraisals** | **347** |
| **Total Engagements** | **518** |
| **Cost New Plants and Major Additions** | **$32,000,000** |

The Mexican plant shown above has complete facilities for bleaching, dyeing and finishing of cotton and rayon textiles. Lockwood Greene were consulting engineers on the entire project and made all machinery and equipment layouts.

# LOCKWOOD GREENE

ENGINEERS - ARCHITECTS

**Boston 9, Mass.**
40 Central Street

**New York 20, N. Y.**
10 Rockefeller Plaza

**Spartanburg, S. C.**
Montgomery Bldg.

215 St. James Street, West, Room 601, Montreal, Canada

Recent grip breakdown tests, proved by

**more than 1,000,000 bobbin transfers,**

**will give you many years of trouble-free loom operation**

**One of the reasons** for this amazing fact is that U S controls the quality of the shuttle from start to finish, using only the very best materials throughout. Every major part is made in the U S plant, under most exacting manufacturing specifications.

Take, for example, this **pre-tested** shuttle grip. It is helping to improve quality and save valuable production time on automatic looms **by avoiding down-time caused by grip failure.**

This is only one of many important features embodied in U S Shuttles. May one of the U S representatives call on you to explain the others?

**Designed and built by the Research Department of U S, this machine for testing automatic shuttle grips provides a practical method for determining *in advance* the length of life of U S shuttle grips.**

**How tests are conducted: Butt ends of bobbins, placed around the periphery of a wheel spinning at speeds comparable to the actual bobbin transfer on a high speed loom, pass through the shuttle grip that is under test.**

**Pre-testing by this machine of samples from each production run is a safeguard for every mill using U S Shuttles . . . just one of the many unique ways in which the recognized superiority of all U S products is constantly being maintained.**

# U.S BOBBIN & SHUTTLE CO.

THE SEAL OF QUALITY AND SERVICE
US
SINCE 1857

LAWRENCE, MASS. • GREENVILLE, S. C. • PHILADELPHIA, PA. • PROVIDENCE, R. I. • CHARLOTTE, N. C. • MINNEAPOLIS, MINN.
LOS ANGELES: E. G. Paules, 1762 W. Vernon Ave. DALLAS: O. T. Daniel, Textile Supply Co. CANADA: W. J. Westaway, Montreal, Que., Hamilton, Ont.

# Here's something to remember when you buy NEW FRAMES

## *Call your Armstrong man*—he can help you

**EXPERIENCED AND DEPENDABLE,** your Armstrong man is always ready to help you. When you have a tough roll covering problem, call your Armstrong man . . . any time.

When you order new frames, it's natural to assume that roll covers that are running well on your present equipment will work just as well on your new frames.

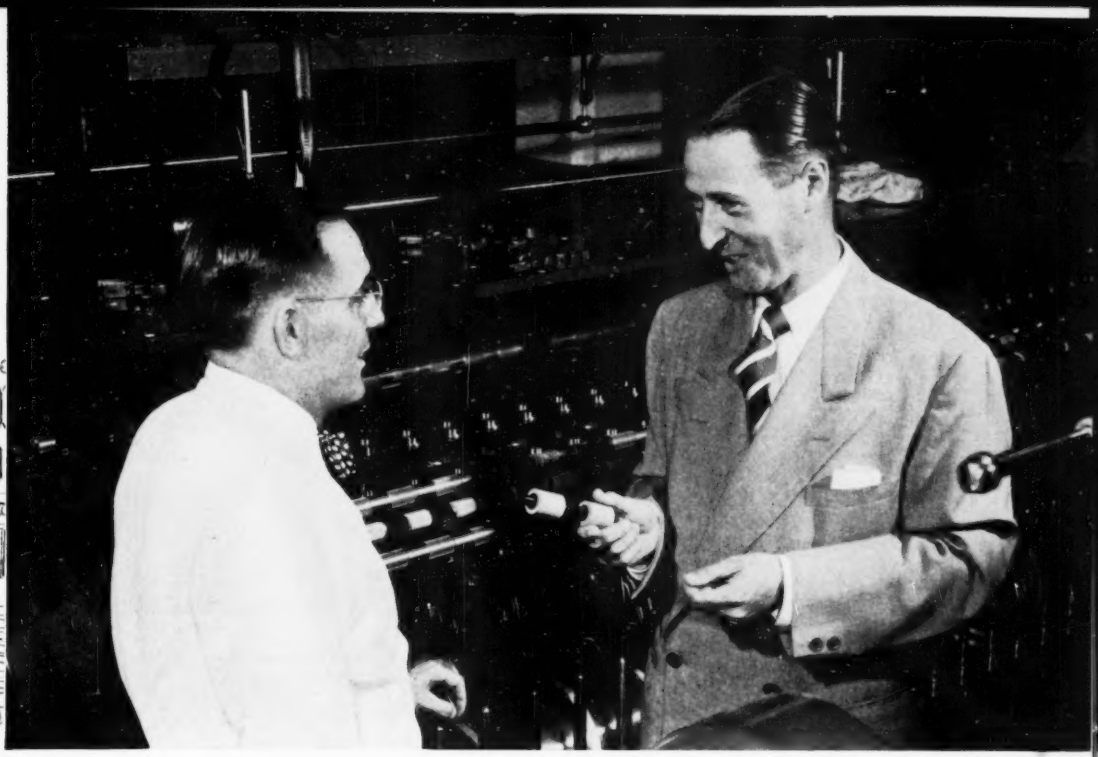
That may not be true. Frequently, your new frames will require a different roll covering to give you the efficient performance for which they were designed.

That's why it's a good idea to call in your Armstrong man when you're buying new frames. Chances are that he already has had experience with the equipment you're installing. If so, he'll know the best type of roll coverings for your new frames and the yarn you're running.

If not, he can find out. In the case of a brand-new frame, for example, Armstrong normally will work with the machinery manufacturer to develop a suitable roll covering. So even in such an extreme case, your Armstrong man will have access to the information you need.

Your Armstrong man, of course, is ready to help you on many other roll covering problems, ranging from

**ARMSTRONG'S**

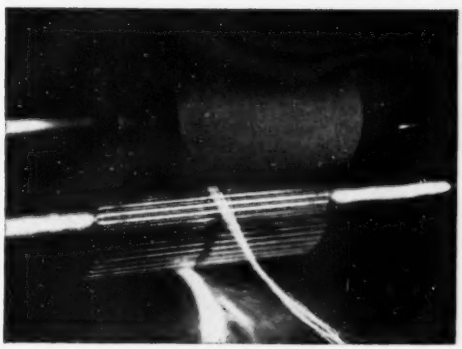


# get the most out of your new equipment

routine maintenance to picking the right cot for spinning a new fiber. In emergencies, a telephone call usually will bring him to your mill within 24 hours.

His complete line of Armstrong's Accotex® Roll Coverings fills every possible need. All Accotex Cots contain the exclusive "electrolyte" that gives it built-in lap resistance. Long-lasting Accotex Cots are available in straight synthetic rubber or combinations of cork and rubber. Varying degrees of firmness assure you of the right cushion for your particular work.

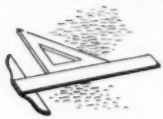
When it comes to roll coverings, there's a combination you can always count on—your Armstrong man and his Accotex Cots. Be sure to let them both help you whether your equipment is old or new. If an Armstrong man doesn't call on you, please write or call Armstrong Cork Company, Textile Products Department, 3610 Arch Street, Lancaster, Pennsylvania. All Accotex products are available for export.



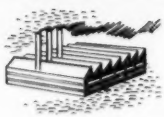
**THIS LONG-WEARING ARMSTRONG COT RESISTS LAPPING** 20 seconds after the roving broke—and there's still no lapping. The reason is in the Accotex Cot. It contains certain electrolytes that eliminate the basic cause of lapping—attraction between electric charges in the moisture layers on the cot and fiber. With many covers, lapping is almost instantaneous, but Accotex gives the yarn enough time to get down to the scavenger roll.

# ACCOTEX COTS

## offers you . . .



**SKILLED DESIGNING TALENT**



**MODERN PRODUCTION FACILITIES**

**PRACTICAL FABRICATING EXPERIENCE**

For many years Hayes Industries has manufactured light weight metal parts for the aircraft industry where advanced manufacturing techniques and exacting precision standards must be maintained. Long experience in fabricating aluminum and magnesium parts has been instrumental in helping to produce textile beams that are light in weight, true running and perfectly balanced. Hayes Light Metal Beams have combined correct design and advanced manufacturing techniques to give you working surfaces that are machined to precise limits permitting sustained production. These working surfaces are perfectly smooth, splinter free and rust proof, requiring practically no maintenance, producing better selvages and reducing rejects to a minimum. Hayes Beams can be taken apart for replacement of damaged parts. Through long and intimate association with the textile industry, Hayes has developed a skilled engineering staff whose services are available to help solve your individual problems.

**HAYES MODERN PLANT FACILITIES PRODUCE**

**Light Metal Loom Beams**
**Light Metal Adjustable Loom Beams**
**Light Metal Section Beams**
**Light Metal Tricot Beams**
**Light Metal Replacement Loom Beam Barrels**

**HAYES**
**INDUSTRIES, INC.,**
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**EASTERN REPRESENTATIVE**
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**For QUALITY**

SOLVAY chemicals for textile processing are uniform products of exacting quality.

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SOLVAY'S exclusive textile Technical Service offers you the services of *textile specialists* to advise you on the best way to handle and use these products in your textile operations.

**For SALES SERVICE**

—with accent on the word "service", SOLVAY has thirteen sales offices and a coast-to-coast organization of distributors ready to serve you.

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You can count on SOLVAY'S centrally located plants and over 200 stock points to give you on-time delivery of the chemicals you need.

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Alkalies Chemicals
Since 1881

Soda Ash • Caustic Soda • Chlorine
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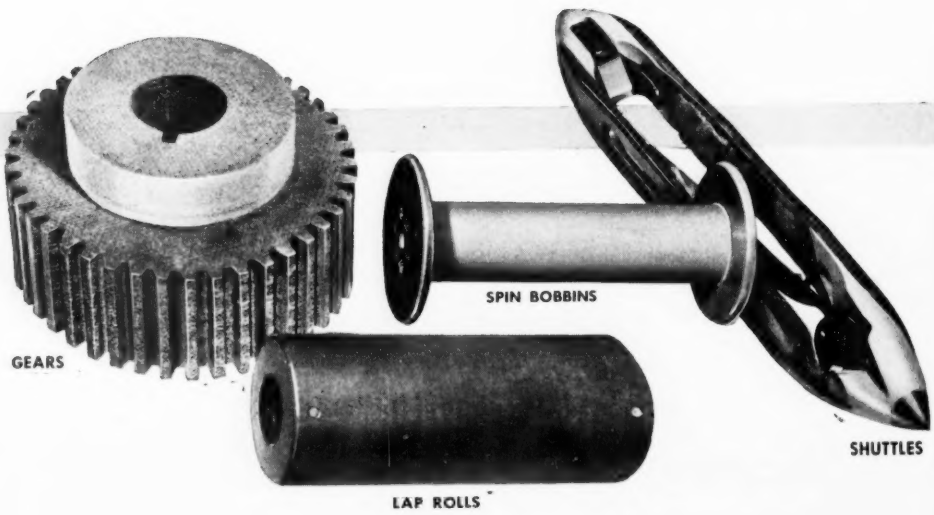
Sodium Bicarbonate • Specialty Cleansers • Sodium Nitrite
Para-dichlorobenzene • Ortho-dichlorobenzene • Ammonium Bicarbonate • Ammonium Chloride • Monochlorobenzene

# here's why... MORE and MORE mills are turning to micarta®...



## because of these qualities . . .

**Saves Weight,** weighs half as much as aluminum.
**Resists Compression,** pound for pound greater than steel.
**Resists Impact,** absorbs and withstands severe shock.
**Withstands Vibration,** cushions repeated shock without effect.
**Insulates** like mica but greater flexibility.
**Resists Corrosion,** not affected by acids, oils, fumes.
**Resists Heat and Cold** from −112 F to 212 F.
**Resists Moisture,** in fact, water is its best lubricant.
**Wears Slowly, Evenly,** in many cases more slowly than metal.
**Reduces Noise,** absorbs vibrations, deadens noise.
**Fabricates Easily,** machined or punched with ordinary tools.

## because of these flexibilities . . .

**Laminated MICARTA** includes standard structural shapes: plates, sheets, angles, channels, rods, tubes and zees. Occasionally this class includes simple molded shapes.

**Molded MICARTA** is the choice for complicated shapes, large production quantities of either simple or complicated shapes, or for certain properties better obtainable in form molding.

## because micarta is basic

**MICARTA** is a tough and resilient basic material that welcomes comparison with other basic materials. This versatile plastic outlasts wood and metal in many punishing applications. Investigate MICARTA and you'll find it the economical solution to tough production problems.

YOU CAN BE SURE... IF IT'S
Westinghouse
micarta

## for more information on how MICARTA can help solve your production problems, and give you advantages no metal can give you, please fill out the coupon below. A MICARTA representative will then call on you personally.

# mail it today!

Westinghouse Electric Corporation
MICARTA Division, Trafford, Pa.
Attention: L. A. Pedley

Sir: (Please Check One)

☐ Please have your representative call
☐ Please send me the complete facts on MICAR

Name _____ Company _____
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City _____ Zone _____ State _____

J-0650

# Marquette
# ROLLER BEARING SPINDLES
## *with* Full-Floating Footstep Bearing

**standard equipment on U.S. ACME TWISTERS**

MODERN THROWING EQUIPMENT

**More than 1,000,000** Marquette Roller Bearing Spindles have been furnished as original equipment on U.S. Acme Twisters, manufactured by U.S. Textile Machine Co. They are operating efficiently at high speeds with heavy packages, requiring a minimum of power and maintenance.

On *any* frame, new or old, Marquette Roller Bearing Spindles will help you produce *more yarn at lower cost.* There is a Marquette Spindle for spinning or twisting every kind of yarn—cotton, synthetics, wool and worsted—and for all sizes of packages up to 12 lb. gross load.

We'll be glad to arrange for a test installation to prove their advantages in *your* mill. Contact our home office or one of our representatives.

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WINDSHIELD WIPERS FOR AIRCRAFT, TRUCKS AND BUSSES • FUEL OIL INJECTORS

Textile Industries
Vol. 116 ● Oct. 1952

# News in Brief

**Would Movie on "Wrong Way" Help Operatives?** Textile men who recently viewed the moving picture by Johns-Manville Corp., which showed employees performing operations in the wrong manner and detrimental to the quality of the manufactured goods, commented favorably on the idea and felt that such could well be applied to many phases of textiles; e.g., spinning, weaving, knitting. It was reported that such a motion picture could be made by amateur photographers with beneficial results.

**Foreign Country Takes to Statistical Quality Control.** A visitor returning from a foreign country which produces textiles in competition to the U. S. has reported that statistical quality control, adopted directly from American methods by a foreign visitor to this country, is practically universal in those textile plants. His comment was that the foreign mills quickly saw the value of statistical quality control as a tool—and carried its adoption much further than American mills, which have had the opportunity to institute the practice for many years.

**Mills Train All But Operatives.** An off-the-record criticism by a competent observer was that mills looking toward the future are training their executives, superintendents, and line supervisors, but neglecting the complete training program for another man that counts—the man at the machine.

**New Cotton Bale Covering?** Experiments are under way on the use of a laminated waterproof paper and jute bagging product to be used as a substitute for conventional jute bagging for cotton bales. Idea is to reduce damage to stock and to prevent contamination, such as tar spots on the outside of cotton bales. Provisions will be made for sampling as heretofore. A well-known firm is also working on the use of bale ties made from metal which does not rust and which, at the same time, reduces the tare weight of bale ties. See page 127, this issue.

**New Cotton Preparatory Machinery?** Whitin Machine Works has been making scientific studies of the problem of separating trash from fiber. Although such studies are being conducted in Whitin's research laboratory, the company is not in a position to disclose findings on proposed new designs of components. According to a spokesman for Whitin: "We know the limitations of the results that can be expected, and we know that it is not possible to clean cotton fiber so that there is no trash left in it similar to synthetic fibers. We do feel that eventually

## The Great Claiming Race

*(A letter to the Editor)*

EDITOR TEXTILE INDUSTRIES:

We are told in the Book of Genesis that after the Creation nothing yet grew, "for the Lord God had not caused it to rain upon the earth, and there was not a man to till the ground. But there went up a mist from the earth and watered the whole face of the ground."

There may not have been a man to till the ground, but we are willing to bet that there was a politician on hand to claim credit for that first rain. And so it has been ever since. The politician makes his way in the world by brassily claiming credit for what better men than himself have done. Not smarter men necessarily, but better men.

The late Kingfish of Louisiana once remarked, "There may be smarter men than me, but they don't live in Louisiana." Since the Kingfish was a journeyman politician of no mean ability, we may reasonably assume that the trade of politician requires smartness, if it does not necessarily involve many other of the more admirable qualities.

The political open season is with us again, and the stewards who have wasted our substance will vociferously explain how skillfully, and to what good purpose, they have wasted it. Even as the fervent orators in Chicago declaimed about the greater blessings they had brought to the people, the newspapers announced an all-time high in the cost of living, which was just another way of announcing an all-time low in the value of the American dollar.

In this august assemblage, strident voices boastfully proclaimed the great benefits conferred upon the farmers during the last 20 years. So convincingly did they speak that quite likely a lot of farmers went down town the next

*(Continued on page 183)*

# Why Blend Your Own?

*In cigarettes, uniformity is the answer. Pack after pack of your favorite smoke is exactly as you want it.*

## STAR WOOLEN BRINGS YOU BLENDED GARNETS OF GUARANTEED CONSISTENT QUALITY

In synthetic garnets, too, it's *reliable uniformity that counts.* Millions of pounds of textile fibres and synthetic garnets are produced by Star Woolen Co. under the most rigid, scientific controls. Whatever your requirements: wool, rayon, nylon, orlon,* dacron*— or any blends or colors of your own choosing — Star Woolen will supply them *exactly as specified,* lot after lot. *Why blend your own?*

**GUARANTEE**

*Uniform as per specifications for quality and fibre content.*

STAR WOOLEN

Star Woolen's *guarantee* to fill your specifications with 100% accuracy means big savings for you. It relieves you of responsibility, record-keeping, installation of bulky, costly machinery and unnecessary payroll expense. Use of our scientifically-produced stocks will save you thousands of dollars annually! And as part of our service, we analyze any of your fibres without charge or obligation.

**Write immediately for full details in terms of your own requirements.**

* Reg. Trade Name of E. I. du Pont de Nemours and Co., Inc.

# STAR WOOLEN co.

*World's Largest Producers of Nylon & Other Synthetic Garnets*

**Cohoes, New York**

we will supply cotton preparatory machinery, the product from which will show an improvement in the preparation of both hand-picked and machine-picked cotton."

**Germ Warfare Down Under.** In the two years since the introduction of myxomatosis, a virus deadly to rabbits, enough of these destructive pests have been killed to permit Australia's grazing lands to carry a minimum of four million more sheep than at present. Studies indicate that seven rabbits will consume as much grass in one day as the average sheep.

**Stockings from Slot Machines.** The first "coin-in-the-slot" stocking machine has been recently installed in Hamburg. The machine dispenses Perlon, nylon, or rayon stockings in various price groups. The purchaser selects the size, type, and quality after inserting the money and then withdraws the packet. The German machine holds 30 pairs of stockings.

**Underwear Production in the Southeast.** The six southeastern states including Georgia, Alabama, North Carolina, Tennessee, Kentucky, and Virginia produce more knit cotton and wool underwear and nightwear than any other area in the country. According to a report issued by the U. S. Department of Commerce, during the first half of 1952 the southeastern states produced 37% of the national total.

**Wage Adjustments in New England.** As of July 23, 17 mills, currently employing 11,907 production operatives, which were not

## Georgia Operating Executives Honor Robert W. Philip

Robert W. Philip (right in photo), vice-president and director of research of Callaway Mills Co., was recently presented a handsomely framed resolution adopted by the Textile Operating Executives of Georgia in appreciation of his services as secretary-treasurer of the organization from its inception in September, 1922, until his resignation last year.

J. C. Edwards, Jr., (left), superintendent of Exposition Cotton Mills Co. and a past general chairman of the Textile Operating Executives of Georgia, made the presentation at a luncheon in Atlanta which was attended by members of the current executive committee and many of the former general chairmen.

## Method Permits Dyeing Dynel at Lower Temperature

Dynel can now be dyed with acetate colors at a temperature of 180 F, according to Sandoz Chemical Works, Inc. (Previously dyeing temperature of at least 205 F was called for in order to obtain proper color value, the announcement indicated.)

With the recently developed dyeing method even deeper shades can be produced, it is claimed; also the lower temperature reduces the amount of delustering and should decrease shrinkage. Another advantage cited for the ability to dye-dynel at the lower temperature is the fact that a temperature of 180 F can be maintained in most all types of dyeing equipment.

**For Good Blacks.** Good jet blacks can be obtained when dyeing dynel in skein form on Klauder-Weldon machine, it is claimed, by using a small amount of Velanol TC to increase the swelling of the fiber and increase the absorption of acetate colors.

Procedure: Treat skeins cold for 30 minutes with 5% Velanol TC (on weight of material). Raise temperature to 120 F and add 6% Artisil Direct Black BKZ dispersed with Sandopan TFL. Increase temperature to 200 F in 30 minutes and run for 1½ hours. Rinse skeins, soap, and dry. Reluster with dry heat (245 F).

# Swing to—

## BOGER & CRAWFORD

### SPUN NYLON YARN!

*The quality of Boger & Crawford yarn is guaranteed—the highest tribute we can pay it.*

SIGNED Frederick Boger

***"SWING" is in the air!***

. . . to Boger & Crawford spun nylon yarn! 60/2 and 80/2 ply.

Ideal for weaving and knitting! Sweater . . . skirt . . . stockings . . . by "courtesy" of B & C spun nylon yarn! Available in 20 wonderful fast colors. Color fastness equal to or better than Synthetic Fiber Test #1 and #2 AATCC.

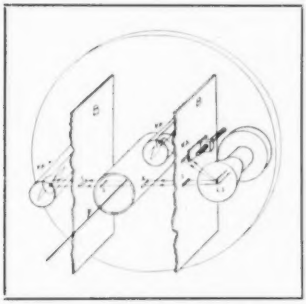
*Write for free samples of colors today!*

## BOGER & CRAWFORD

Venango & K Sts • Philadelphia 34, Pa.

involved in the Fall River-New Bedford or Bates arbitration proceedings, have reached agreements with their union locals to follow the Fall River-New Bedford award. None of these mills has a Textron-type union contract. In most mills the wage decrease amounted to approximately 8.5 cents per hour. A total of 44 mills employing 28,675 production operatives, or 60 per cent of northern production operatives in 92 mills have now adopted the wage adjustments of the Fall River-New Bedford award or the Bates decision. This leaves 9 mills employing 6,182 operatives that exercised wage reopening rights, but which have not yet reported any decision concerning wage reductions. Four additional mills which planned to reopen their contracts have closed indefinitely since January 1952.

**Optical Yarn Evenness Tester.** An optical yarn evenness tester has been developed and has provision for rotating the optical system of the tester so that the instrument may be used to measure the diameter (or circumference) of yarns which do not necessarily have a circular cross-section. Advantages claimed for the tester are: (1) The tester measures yarn diameter which is fundamentally different from weight per unit length of yarn. (2) The tester is capable of measuring the evenness of yarns which do not have a circular cross-section. (3) The evenness of the yarn is measured continuously without touching it or twisting it or deforming it in any way. (4) The yarn does not have to be conditioned and evenness measurements may be made in any atmosphere. (5) The evenness of staple yarns comprised of blended fibers may be measured directly without worrying about the dielectric constants of the fibers in the blends and the uniformity of blending. (6) The coefficient of variation of yarn diameter is more or less independent of yarn count and may be used to compare the evenness of two yarns differing somewhat in count.



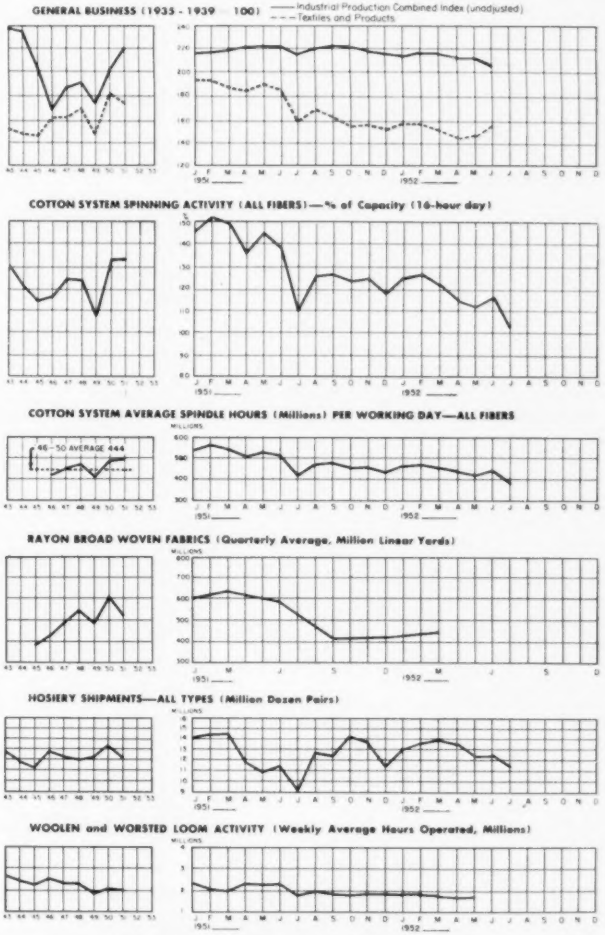
**YARN EVENNESS TESTER.** B, baffles; S, slit; V. S., variable slit; V. P., vacuum photocell; Y, yarn; L. S., light source.

**German Invention for Weavers.** An East German invention con-

(*Continued on page* 231)

## Textile Industry Activity Charts

Source of information: Bureau of the Census, U. S. Department of Commerce; National Association of Hosiery Manufacturers.


GENERAL BUSINESS (1935 - 1939 = 100) —— Industrial Production Combined Index (unadjusted) - - - Textiles and Products
COTTON SYSTEM SPINNING ACTIVITY (ALL FIBERS)—% of Capacity (10-hour day)
COTTON SYSTEM AVERAGE SPINDLE HOURS (Millions) PER WORKING DAY—ALL FIBERS
46-50 AVERAGE 444
RAYON BROAD WOVEN FABRICS (Quarterly Average, Million Linear Yards)
HOSIERY SHIPMENTS—ALL TYPES (Million Dozen Pairs)
WOOLEN and WORSTED LOOM ACTIVITY (Weekly Average Hours Operated, Millions)
1951
1952

**Woolen and worsted looms** operated 1,904 thousand hours per week during the month of June—5 per cent more activity than that reported for the preceding month of May.

SERVING THE TEXTILE INDUSTRY SINCE 1899

# SONOCO

Precision Paper Products

# Specialty TUBES

SPECIAL problems? . . . Solve them with SONOCO Specialty Tubes! SONOCO tubes have earned an enviable reputation for their uniform accuracy in every detail, a result of our more than 50 years experience and intense concentration on the perfection of our manufacturing methods together with a close and continuous study of requirements in the textile and other industries by whom this type product is used. SONOCO tubes can be impregnated, treated, printed, notched, scored or perforated.

For All Types of Synthetic Fibers

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DEPENDABLE SOURCE OF SUPPLY

# AN EXECUTIVE Views

## THE NEWS IN TEXTILES

*Prepared by a man who is closely identified with the textile industry.*

## Raw Cotton: Lost One: Won One

IN THE August issue of TEXTILE INDUSTRIES, we commented in this column about several problems which were currently facing those who follow the raw cotton situation. One of these, as you will recall, was the threat of the Department of Agriculture to change the cotton standards.

There were other borderline issues involved, but the main question of the moment was the fact that representatives of the various shippers and cotton cooperative organizations felt that the standards as displayed by the Department of Agriculture were representative of the cotton crop, that they were entirely fair and equitable in every respect, and that they should be adopted.

The mill representatives on the other hand felt that the standards displayed by the Department *were not* representative, and that they constituted a lowering of standards which would be detrimental to mill interests, to shipper interests, and to the cotton farmer.

The Department held a conference in Washington on this question with the various interests represented, and following this took their proposed standards to Europe where they were viewed by representatives of textile companies in various foreign countries. The European representatives, in general, approved the Department's action, and thus, that left the American textile manufacturers out on a limb by themselves with all other interests favoring the adoption of the standards.

Since that time the Department of Agriculture has sent out official notification that the new standards, which were vigorously opposed by mill representatives, have been adopted by the government and will become effective August 15, 1953.

Many mill buyers feel that for a number of years there has been a steady attrition of cotton standards, and that this will in time work to the detriment of cotton and in favor of its competition. They feel too that the adoption of

government standards which do not meet the approval of manufacturers will result in many mills not using government standards at all, but instead buying on type.

The second point we mentioned in the August issue was the question of the "Abernethy Bill." As you may remember, this was a proposal in Congress to tie in the support price for cotton with whether or not estimated cotton production would reach 16 million bales. We mentioned that this seemed to us to be a very bad example of subsidies at their worst, and that if adopted, this Bill would be another step down the long and muddy road to socialism.

Fortunately for our side, Congress did not adopt the "Abernethy Bill," and this at least is one hurdle that we managed to leap.

Box score on raw cotton: lost one; won one.

### International Cotton Textile Conference

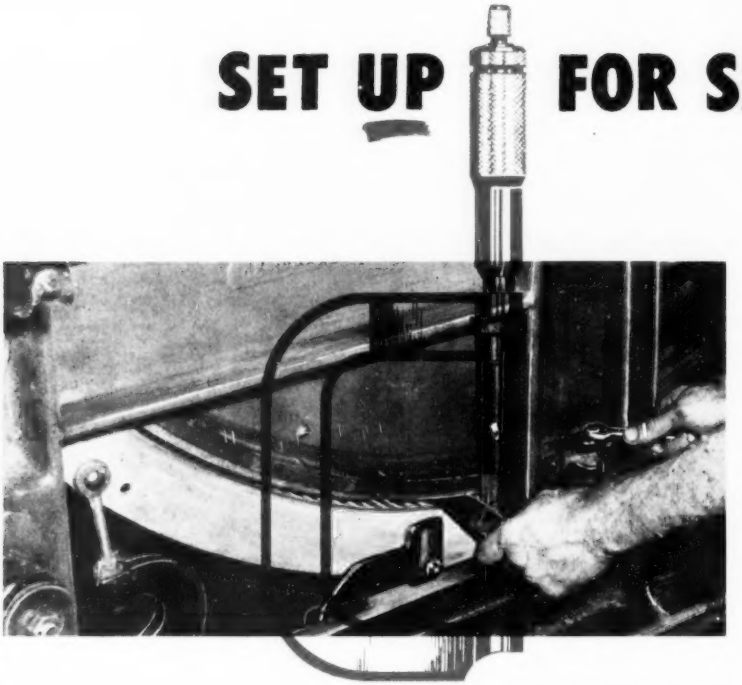
In another column of two or three months ago we mentioned the fact that America would send a delegation to England in September to represent the textile industry of this country in the pending International Cotton Textile Conference. This mission left America on September 10, and began its conferences with representatives of England, Japan, India, and other countries on September 17. Preliminary meetings were held in London, and the Conference then adjourned to Buxton, English resort, for further deliberations.

Few will doubt that the world cotton textile situation is in need of some sort of "shot in the arm," and all of us connected with the industry will be watching for reports on the Conference.

### QM Meeting

The meeting of the Quartermaster Association, which was held in Atlanta a few weeks ago, calls to mind the fact that the Quartermaster Association is an organization which is participated in by a number of textile men, but

# SET UP FOR SAVINGS



## WITH THE CLOSER TOLERANCES OF JENKINS SCREENS

Set them up *closer* under the card cylinder—and give Jenkins screens a chance to save you money! Jenkins builds them to set just as closely to your card cylinder as you require . . . to take out more motes and trash, and eliminate the loss of good cotton.

Your Jenkins screens are easily installed for maximum economy. Their engineered uniformity assures a close, easy fit at every point . . . gives a "perfect circle" under card cylinder . . . makes tedious, time-consuming adjustments unnecessary. In many cases, card grinders report they can install Jenkins screens in one-half the time required for an ordinary screen.

If you're *not* saving money with your Jenkins screens, it will pay you to check their setting—or consult a Jenkins representative.

JENKINS

ENGINEERED PRODUCTS

**JENKINS METAL SHOPS**

**GASTONIA • NORTH CAROLINA**

which is probably somewhat of an enigma to many others.

First of all, what is the Quartermaster Association? Primarily, it is an organization where those who buy for the Army may meet with those who sell to the Army, or who may sell to the Army.

The Association is not a place where buying and selling are done, of course, but rather, it provides an opportunity for Army officers and civilian industrialists to meet informally and to discuss their problems without the red tape which is oftentimes found in meetings sponsored by the government. It is a non-governmental organization whose president, in recent years, has been a civilian.

For the past year the Association has been headed by Charles P. McCormick, president of McCormick and Company (Bee Brand spices) of Baltimore, Maryland, as the chief honorary officer; the chief paid officer is the executive vice-president, and this is Major-General Herman Feldman, the immediate past Quartermaster General of the Army. Charles A. Cannon was a president a few years ago, and Roy A. Cheney, president of the Underwear Institute, has taken a great interest in QM activities.

Organized in March, 1920 as the "Society of Quartermaster Officers," the name was changed in 1921 to the Quartermaster Association. The organization was first intended for officers of the Quartermaster Corps of the Army, but when the name was changed in 1921 its scope was broadened to include the promotion of cooperation between officers and representatives of industry. In 1947, the industrial phase of the QM Association's operations was expanded still further.

In our opinion, the Quarter- Association is serving an excellent function, and it merits the support of the textile industry.

## Elections

Just by way of closing, it might be well to mention that November 4 is going to be an important day in the history of the American nation. As we view Election Day we find ourselves facing this question:

What is the paramount issue facing the American people on November 4?

Is it the election of Mr. Eisenhower or Mr. Stevenson? Is it the election of a Democratic or Republican Congress? Is it tax legislation, labor legislation, or is it FEPC?

Somehow, this writer does not believe it is any of these because we feel that each of these is perhaps merely a symptom of our malady. To us the paramount issue seems to be finding a candidate or a party who will stop fooling the American electorate.

There is a lot of talk of old age

pensions, but nobody tells us that when we become 65 the money we receive in old age pensions will buy so little that our pensions may be cut in half or more than in half. Nobody tells us that this devaluation of currency is being brought about largely by Federal deficit spending; in fact, if they told us

(*Continued on page* 237)

**Oct. 6-11**—Seventeenth **Southern Textile Exposition**, Textile Hall, Greenville, S. C.

**Oct. 16-17**—Annual convention, **The Quartermaster Association**, Biltmore Hotel, Atlanta, Ga.

**Oct. 16-17**—Annual meeting, **North Carolina Cotton Manufacturers' Association, Inc.**, The Carolina, Pinehurst, N. C.

**Oct. 20-24**—**40th National Safety Congress and Exposition**, Industrial safety sessions at Conrad Hilton, Congress, and Morrison Hotels, Chicago, Ill.

**Oct. 24**—Meeting, **Georgia Section**, Textile Division, **American Society for Quality Control**, A. French Textile School, Georgia Institute of Technology, Atlanta, Ga.

**Oct. 25**—Fall meeting, **Textile Operating Executives of Georgia**, A. French Textile School, Georgia Institute of Technology, Atlanta, Ga.

**Oct. 24-25**—Third annual conclave for **Alumni of School of Textiles, North Carolina State College**, Raleigh, N. C.

**Nov. 5-7**—Sixteenth annual **Time and Motion Study and Management Clinic**, Hotel Sheraton, Chicago, Ill.

**Nov. 6-7**—1952 **Carolinas Conference on Electrical Engineering and the Textile Industry**, North Carolina State College School of Textiles, Raleigh, N. C.

**Nov. 6-8**—31st annual convention of the **American Association of Textile Chemists and Colorists**; also the Textile Dyeing and Finishing Exposition. Hotel Statler, Boston, Mass.

**Nov. 14-22**—Annual conventions, **Carded Yarn Association** and **Southern Combed Yarn Spinners Association**. Convention cruise to Bermuda.

**Nov. 17-18**—**Textile Research Institute** annual meeting, Hotel Commodore, New York, N. Y.

### 1953

**Jan. 19-22**—**Plant Maintenance Show**, Public Auditorium, Cleveland, Ohio.

**Feb. 18-20**—Fourth annual **Cotton Research Clinic**, General Oglethorpe Hotel, Savannah, Ga.

**Mar. 26-28**—Annual convention, **American Cotton Manufacturers Institute**, Palm Beach Biltmore Hotel, Palm Beach, Fla.

**April 9-11**—Annual convention, **Alabama Cotton Manufacturers Association**, Buena Vista Hotel, Biloxi, Miss.

**April 20-24**—**National Packaging Exposition**, Navy Pier, Chicago, Ill.

**April 27-28**—Annual convention and conference, **National Association of Hosiery Manufacturers**, Claridge Hotel, Atlantic City, N. J.

**April 27-May 1**—**Knitting Arts Exhibition**, Auditorium, Atlantic City, N. J.

**May 18-22**—**Materials Handling Exposition**, Convention Hall, Philadelphia, Pa.

**May 25-30**—Annual conference, **Textile Institute**, Llandudno, North Wales.

**June 18-20**—Annual meeting, **Southern Textile Association**, Mayview Manor, Blowing Rock, N. C.

# Specify WALKER HEDDLES

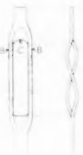
## Because

**THERE ARE WALKER HEDDLES**
designed for every weaving need.
Yet these important basic design features
are common to all Walker heddles.

Engineering development and field service
back your selection of Walker equipment.
Consult your Walker or Draper representative
the next time you need loom harness
whether it be a single frame,
a few repair heddles,
or complete equipment of your mill.

## Because

**WALKER HEDDLE ROD SLOTS** are vital
to the long-wearing qualities
of your heddles. These slots
are designed with fully rounded heads
and parallel walls to concentrate
all the wear
at the central point "C"
instead of the vulnerable
thin sides "B" of the rod slot.
This design feature of all
Walker heddles, assures longer
heddle life and greater freedom
of the heddles, to allow
for warp adjustment.



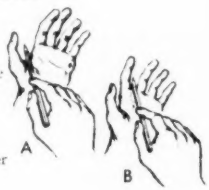
## Because

**THE EYES** of Walker heddles,
regardless of the type or turn
that you use, are designed
for easy yarn passage.
The broad base of the top
and the bottom of the eye
and the smooth polished sides
for the yarn to pass over
assure the minimum of chafing.

The enlarged diagram
of this typical Walker heddle eye,
shows how the walls of the eye
are twisted almost parallel
to the warp threads,
giving smooth yarn passage.
The warp remains parallel
even when you are weaving
high count fabrics.

### PROVE IT TO YOURSELF

**USING A PENCIL** to simulate
a warp thread
note how easily it travels
when passed through the broad base
between thumb and forefinger
(bottom of Walker heddle eye
in Figure A) while the pencil
(warp thread) binds in the small
space between first and second finger
(typical of oval or V bottom
of ordinary heddle eye).




## Because

**THE WIRE** of Walker heddles,
made from the finest materials available,
is highly finished and polished
for long heddle life
and clean, stain-free, fabrics.

For cotton, cadmium plated heddles are
recommended because of their lower cost.
Cadmium is highly resistant to corrosion
even in extremely humid atmospheres.
Its slight tendency to streak or smudge warps
is not objectionable since the marks
are easily removed during the finishing processes.

Wool and worsteds call for nickel plated
heddles since nickel does not smudge.

Stainless steel heddles are the best
for the weaving of all synthetic yarns.
Their long life and complete freedom from
staining give them the advantage of the lowest
long-run cost. They will not streak
or smudge the warp and are easily kept free
of lint and dirt. Since they are not subject
to corrosion, they last longer
and produce better quality cloth.

**WALKER** DIVISION OF **HEDDLES • HEDDLE FRAMES • REEDS**
**DRAPER CORPORATION**
ATLANTIC & RUTH STS., PHILA., PA.

# NEW Equipment AND MATERIALS

## Spinning Speed Changes Easily Made with New Drive

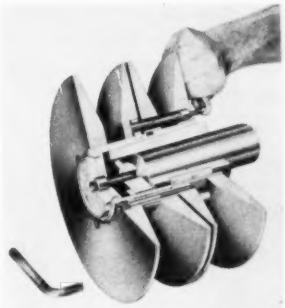
A spinning frame drive incorporating the Taper-Lock principle cuts down-time on speed changes and increases production.

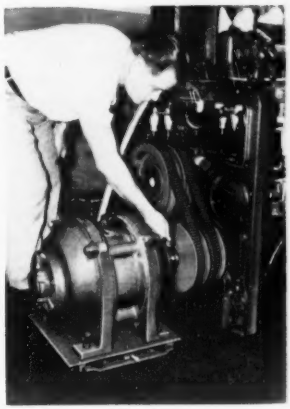
Components of this new Dodge Variable Speed Drive are: (1) a variable pitch motor sheave; (2) a set of wide range belts; (3) a companion sheave; (4) a slide motor base. The Taper-Lock principle is used in the bushings for both sheaves and contributes to the rapidity and ease with which speed changes can be made. The drive is exceedingly compact; the sheaves occupy a minimum space on the shaft.

The variable sheave assembly locks on the motor shaft as a unit with the turn of a screw.

The pitch diameter is changed easily and positively by means of a one-point adjustment. The single adjusting screw may be located at either end of the sheave although normally the sheave is factory assembled with the adjusting point located on the motor side. The pitch diameter can be set accurately and cylinder speeds held to close limits.

The belts are of the latest design "R" section, having deep side walls which help to insure long life.





**Above, sectional view of Dodge spinning frame drive showing principle of operation. Right, installation photo.**

Transverse ribs provide greater lateral rigidity. The belts are oilproof, heat-resistant, and static conducting.

The companion sheave in the drive is of simple, modern design, and for safety has no projecting parts.

The slide motor base permits changes in center distances to preserve proper belt tension as the variable pitch sheave is adjusted for different speeds. A full range of centers is provided with an easy turn of one screw. It is compact, of flush design, and is available in a full range of sizes for NEMA frame motors.

*Dodge Manufacturing Corp., Mishawaka, Ind.*

For additional data, request item J-115, using business reply card on page 230.

## Tension Discs and Posts of Extremely Hard Material

Tension discs and posts are now being made from AlSiMag 513, a pink-colored ceramic that is extremely hard, resists cutting, and maintains a uniform finish for a long time.

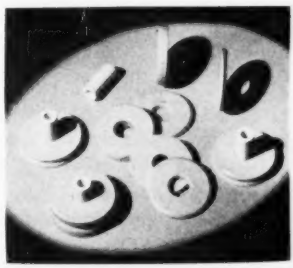
A mill processing one of the industry's most abrasive yarns reports that after 78 weeks of use these tension discs and posts show no sign of wear and are still in everyday use. Formerly chrome-plated tension discs and posts had been utilized, and it was necessary to replace them every six weeks.

The discs are ground flat within 0.0001" to give perfect yarn contact, and they stay flat. Furnished with either a satin finish or highly polished surface. Both the discs and posts are made in any size desired. Discs of any weight can be furnished. Sizes and weights will be uniform from piece to piece and from shipment to shipment.

Samples are available from the manufacturer.

*American Lava Corp., Chattanooga 5, Tenn.*

For additional data, request item J-119, using business reply card on page 230.

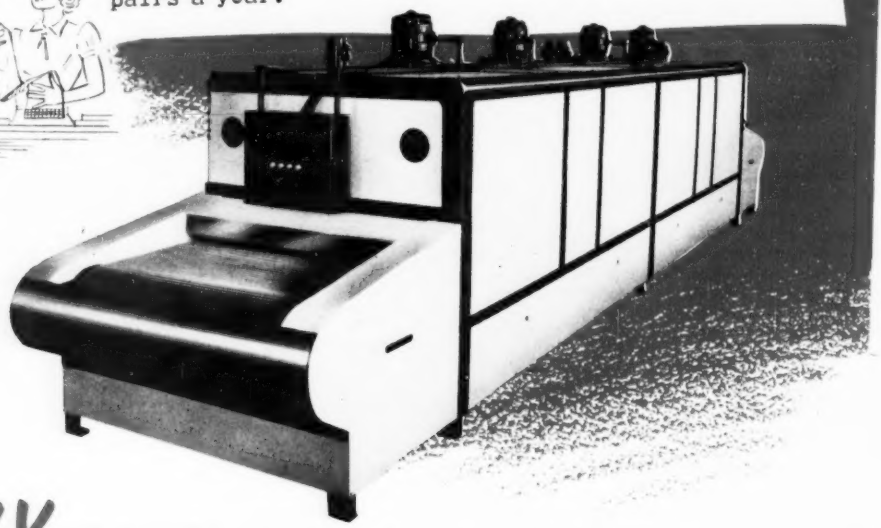


**Tension discs and posts, for all types of yarn, made of AlSiMag 513 (American Lava).**

# PROGRESS REPORT on the New SMITH-DRUM Nylon Hosiery Drying Machine . . .

## Production: From Zero to 17,000,000 DOZEN Pairs Annually in only 2 Years!

Introduced only 2 years ago, this new SMITH-DRUM Machine is now in operation in many of the country's leading mills. They are now handling a substantial portion of total annual production of ladies' full-fashioned nylon stockings . . . 17,000,000 dozen pairs a year.



## *WHY* this Amazingly Fast Acceptance?

The reasons for this remarkable acceptance are obvious when you know these facts reported by users:

1st—An average labor cost for the drying operation of only 2½c per dozen pairs—compared with 12½c by post-boarding methods.

2nd—A big reduction in number of menders with subsequent saving in mending costs.

3rd—Appearance superior to post-boarded production, whether regular or combination preset and post-board method.

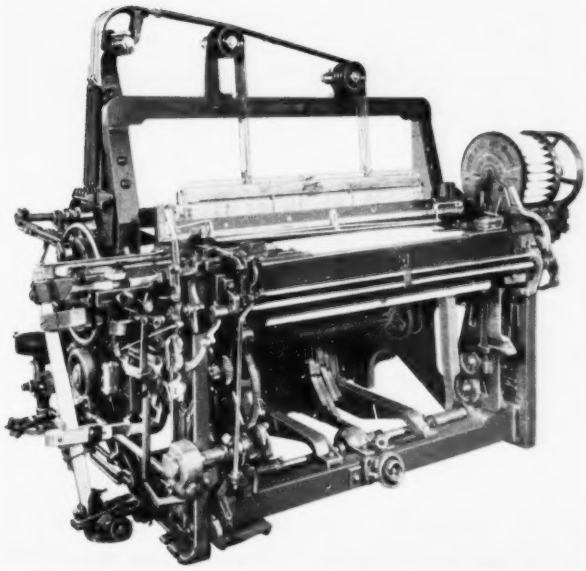
Can you meet this competition with your present post-boarding costs and results? Let us give you complete information. Write

**SMITH, DRUM & COMPANY**

**432 W. Allegheny Avenue, Philadelphia 33, Penna.**

*Southern Sales Representatives:*
**PARROTT & BALLENTINE**
**610 South Carolina National Bank Bldg.**
**Greenville, South Carolina**

*The (SMITH-DRUM) Machine That Abolishes the Slow, Costly Post-Boarding Method*



One of the new cotton looms built by Hunt.

## New Looms for Heavy and Light Cotton Fabrics

Two new cotton looms, the HC 50 and the HL 16, feature heavy construction in the sides, and both are furnished with the improved Hunt Spreader that has four bearings to stabilize the crank shaft and two additional bearings on the cam shaft.

The HC 50 loom, for weaving of heavy cotton fabrics up to 64" wide, permits operation at a high speed with continuous production. Features include: Hunt No. 8 individual motor drive with demountable gear; roll and shaft, or Brown spring-top harness motion, or 20-harness dobby; a crankshaft diameter of $1^5/_8$ in. and camshaft diameter of 1-15/16 in.; single or double side-filling stop motion, or a center-filling stop motion.

The HL 16 for lighter constructions up to 60" wide incorporates: the Hunt No. 1 drive; roll and shaft, or Brown spring-top harness motion, or 12-harness dobby; a crankshaft diameter of either $1^5/_8$ in. or $1^3/_8$ in. and camshaft diameter of 1-9/16 in.; single or double side-filling stop motion.

Both the HC and HL looms have numerous features that insure trouble-free operation: beam heads through 26" diameter; midget feeler (optional); Stafford thread cutter No. 21 or 23; bobbin lengths of $7^3/_8$, 8, and $8^3/_4$ in.; High-roll take-up with worm or nutting bar; Roper, Bartlett, or friction let-off; vibrating, revolving, or Durkin-type whiproll; drag rolls (optional); electric warp-stop motion of 2, 3, 4, or 6 banks; cam shaft or auxiliary cam motion; latest type motors, furnished to specifications; gears of cut teeth throughout except for the let-off pinion; plain or tape selvage motion.

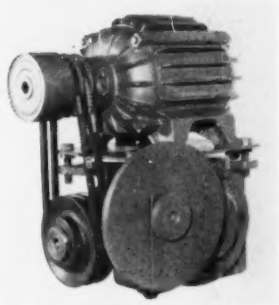
*Hunt Loom & Machine Works, Inc., 200 Academy St., Greenville, S. C.*

For additional data, request item J-112, using business reply card on page 230.

## "Package" Drive for Cards Mounts on Cylinder Shaft

A new "package" drive for cards consists of a $1^1/_2$-hp, 1740-rpm standard enclosed motor, Falk gear reducer, automatic friction clutch, and "Texrope" drives. The right-angle, single-reduction gear permits mounting the motor at a right angle to the card shaft, with the unit extending only a few inches into the aisle adjacent to the card. The drive mounts directly on the card cylinder shaft with a torque arm mounted on the card base or suitable anchoring point. Thus no vibration is present in any part of the card frame.

The automatic clutch makes possible use of a motor with standard torque and eliminates high starting current during the first few seconds of card operation. Two-step pulleys are provided on the reducer: a 10-inch sheave for stripping the cylinder and a three-inch sheave for stripping the doffer. The unit is reversible and can be used for either right or left-hand mounting.



Allis-Chalmers card drive.

*Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

For additional data, request item J-107, using business reply card on page 230.

## Sliver Tester Measures Length of Fibers

An automatic top testing machine manufactured by N. Schlumber & Cie, Guebwiller, Haut-Rhin, France, for determining the fiber length in a wool, worsted or synthetic sliver is being introduced in the United States.

This analyzer is designed to divide a sliver of textile fibers in order to determine the variation and mean of the lengths of fibers. It can be used in analyzing slivers containing fibers up to a maximum length of 350 mm. The measurement is made by means of a set of 33 fallers, spaced 10 mm apart.

The analyzer includes an oscillat-

(Continued on page 187)

# First Choice!

## and no wonder...

. . . The Dayco Cot's "super" fiber repellence makes it a big hit with millmen—no matter what fibers they're spinning! For whether you spin cotton, wool, blends or synthetic fibers, you'll find the Dayco Cot means fewer lap-ups, fewer ends down, cleaner yarn. And its better wearing qualities make it *outlast* any ordinary roll covering you've ever used.

Here's what *users* say: "Already outlasted the type of cot we were using, and good for years more" . . . "roll replacement is minimized" . . . "They spin perfect yarn right from the go, even on Monday morning startups!"

***Visit us at Booth No. 135, Southern Textile Exposition, Greenville, S. C.— October 6th-11th***

© D. R. 1952

**See for yourself**—put Dayco Cots on your frames, for the long pull ahead. Ask your salesman or: Dayton Rubber Co., Textile Div., Woodside Bldg., Greenville, S.C.

**Dayton Rubber**

*Since 1905*

TEXTILE PRODUCTS FOR BETTER SPINNING AND WEAVING

# Shorts and Remnants

**This'n That**

Between telephone calls from folks who want to know where to buy fabrics, Chambers of Commerce fetching information on mills moving from where to there, and supplying dope to speech makers, we try to answer an occasional letter—and if there's time get out on occasional issue.

► For instance, Mr. Frame of Natal, South Africa, is working in a mill but deplores the absence of technical schools and technical information (except from TI) and would we put him in touch with technical schools in the U. S. A. The touch was put.

► And once in a while we get a thank-you note for service rendered, like from our good friend, Homer Roberts in Alabama, who says he appreciates the effort and information and that it "was a big help." We like to render "big help," and though it's usually taken for granted, a note like that gives us a big boost.

► But if we happen to get low, we only have to turn to the Desert Springs Company to get refreshed and lifted in our own private mineral spring. Merely dissolve a packet of Desert Springs into your tub and you will enjoy all the benefits of a healthy mineral bath, with amazing relief whereby we are then sleeping like a child, it says in elite type. Loom fixers might be good prospects too.

► Changes of scenery offer the same uplift to others. Associate editor Paul Platzman returns from his army training tour with the news that he is back into editorial operation, and though it is a tough transition from TS to TI, he'll manage and make eight copies of everything he writes.

► From Lane Cotton Mills our address went to Landuyt-Wuyts in Eecloo, Belgium, who promptly said they heard American mills are using synthetic roll coverings and who makes such; clipped TI ads and a letter confirmed the rumor, making it their next move.

► Delighted were we to give permission to one of our textile associations for permission to reproduce Ringgold Arden's piece on "Another Peep into the Hen House." He (Ringgold) is with us just about every issue peeping at something; and he has a good following. If you executives haven't tried checking his comments for your supervisors—you might do so. He posts them on some good dope they might need to answer questions popped from operatives.

► As summer goes and winter draws on, we'll miss those convention beach scenes that look like some of our photos—over-exposed. But we won't worry too much about our staff getting confused on the seasons and showing up at Miami when they should be in Montreal; Mr. Merrill of General Electric has a calendar that is permanent. That is, it's permanent from 1753 to 2059. And it's so small it can go in your wallet. We've always wanted to know what day Christmas will fall on in the year 2000. Confidentially, it's Monday. We even found that the Declaration of Independence was signed on Thursday.

Never know what you'll learn on this page. Keep your eye on TI.

**Waste**

"Would like three copies 'Cotton Waste' as appeared . . . September 1950. Also . . . three copies 'Waste Reduction and Control' . . . October 1948. The current article [July issue] on 'Wamsutta's Waste Control Program' . . . one of most interesting and thoroughly explained programs that I have ever read."

HERMAN D. SMITH, JR.
Division M&S Engineer
Burlington Mills Corp.
Cramerton, N. C.

► Waste Reduction reprints forwarded. "Cotton Waste" available from National Cotton Council.

## The Fellow with the Good Nose

THE LITTLE cut that has appeared on our contents page for such a long time was there years before the New Deal developed its alphabetical agencies. It stands for Audit Bureau of Circulations. It doesn't mean that we're a member of any secret order.

As a matter of fact, that cut (or ones from other similar organizations) means that everything about TEXTILE INDUSTRIES is pretty much in the open. It signifies that a fellow with a good nose for digging out the facts (like your annual auditor's visit) has gone through our circulation records to see if what we say is so, is so.

You have similar operations in your own plant. If the overseer of spinning says he believes the yarn is breaking at 50 pounds now that he's made a change on the frames, your laboratory makes a check to see if he is correct—and keeps on checking so that you'll find anything wrong before the customer does.

Our advertisers want to know who is getting the magazine and what positions they occupy in the textile industry. We can tell 'em—but the auditor tells 'em too. When an audit is made of circulation, it is published and goes to anyone in the country that demonstrates an interest in the report (such as advertisers, advertising agencies, or other publishers).

Therefore, when we say that "TI has the largest circulation among the textile mills of the U. S. and Canada" it must be so, or we'd get a lot of letters from a lot of people calling our hand.

If we say Bill Jones, superintendent of Jones Textile Mill, gets TI and will continue to get it for two more years, the auditor verifies the fact. Then if an advertiser wants to get his message across to Bill Jones and other textile men like him, he knows he can do so in TI.

If Bill Jones is not receiving TI, the auditor knows that too. And so do our advertisers. So if enough Bill Jones' don't read TI, it is reflected very quickly—thus we are kept on our editorial toes and you, the reader, get a better magazine (or a new editor).

An interesting sidelight (especially in these times), is that the auditing organizations are creations of independent business men—not governmental agencies. The publishing industry has never undergone government control, but it has controlled itself—or rather we should say that it has regulated itself. This free association of people engaged in advertising and selling protects the publisher, the advertiser, and the reader.

We trust that we can continue to run our businesses so there will never be a need for a *Federal* Bureau of Circulation Audit.

## *Another Smooth Operation*

If you've seen Textile Spring-Beard Needles in operation, you have seen the effects of their smooth, mirror-like finish . . . The yarn slides around the needle end smoothly, evenly, quickly. This makes a big difference in improved, high-speed knitting.

Smoothness is but one of the many advantages you get from Textile Spring-Beard Needles. Every stage in the production of Textile Needles is under rigid, scientific control — automatic and electronic — from the selection of the proper steel to the final packaging. They are your assurance of a finer fabric, lower production costs.

**TEXTILE MACHINE WORKS, READING, PENNA.**

# *Textile*
# SPRING-BEARD NEEDLES

*For Full-Fashioned Knitting*
*For Tricot Knitting*

# $2,171,435,000

# Used to Benefit Foreign Textiles

**THE EDITORS requested a trained Washington reporter to investigate foreign expenditures in the field of textiles by the United States under "Point Four" and other foreign aid programs. Here is what he found. Comments from mill men and equipment suppliers are invited.**

UNMISTAKABLE evidence of a growing distortion in the world textile trade situation is demanding increasing attention, not alone by manufacturers of textiles but by many others who are concerned with the hope of achieving political-economic balance throughout the globe.

The textile industry of the United States as well as textile interests of all foreign countries where fabric and yarn manufacturing comprises an important bulwark of the economy, are compelled to study soberly the basic paradox of vastly expanded production versus the steady decline in export business generally.

**Nationalistic Policies of Foreign States.** To aggravate this situation, intensely nationalistic policies are now being asserted by the governments of many foreign states, including a number where new textile industries are under rapid development. Although most of these nations may contend they are building up their facilities to supply their home market needs, there is evidence they also intend to use textile exports as a means of acquiring foreign exchange.

From any such policy, two results must be foreseen:

First, *each country tends to construct tariff walls or set up other forms of import restrictions to shut out foreign goods, after getting its own industry started.* This only narrows still further the area of the world market, of course.

Secondly, *expanded production for export purposes in the face of a declining market can only lead in time to a price collapse and demoralization of the domestic economy.* The heavy financial losses that would ensue, plus unemployment, internal dislocation and discouragement, would seriously impede and might well reverse the progress toward economic stability being realized in many nations.

**Situation Studied.** The urgency of this problem, which has been sketched but briefly in broad outlines, was one of the dominant reasons why the world's cotton textile leadership felt it necessary to hold the International Cotton Textile Conference in England last month. For the first time in history, spokesmen of all major textile nations arranged to meet together for the sake of analyzing the situation and exploring possible ways of arriving at a reasonable, mutually satisfactory solution.

It would be futile to hope, however, that a single conclave of this kind could solve such a perplexing question. No easy remedy is ever found in such a situation, nor is it likely that in a world of differing races and peoples will there soon be achieved general agreement on remedial policies. The solution to the problem will cost heavily in time and effort.

IN THE MEANTIME, policies of the United States government as they relate to the basic question of overseas rehabilitation and expansion of textile industries merit close scrutiny. The kinds of assistance and dollar amounts of such aid are of immediate interest insofar as they pertain to the general world trade problem.

**"Point Four" Aid.** The administration of assistance to foreign nations falls in three general categories. One which has been receiving a large amount of attention in recent months is the "Point Four" program handled by the Technical Cooperation Administration of the U. S. Department of State. Designed to teach and guide the inhabitants of underdeveloped areas in improving their living

### *Destinations and Dollar Amounts of Raw Cotton Allocations by MSA (1948-May 1952)*

| | | | |
|---|---|---|---|
| Austria | $ 44,700,000 | Indonesia | 500,000 |
| Belgium-Luxembourg | 6,500,000 | Norway | 1,900,000 |
| Denmark | 18,300,000 | Sweden | 1,600,000 |
| France | 364,200,000 | Trieste | 200,000 |
| Germany (Fed. Rep.) | 260,800,000 | United Kingdom | 259,700,000 |
| Greece | 9,200,000 | Yugoslavia | 30,700,000 |
| Ireland | 200,000 | Burma | 1,800,000 |
| Italy | 379,300,000 | Formosa | 20,318,000 |
| Netherlands | 119,600,000 | Indochina | 5,974,000 |
| | | Philippines | 470,000 |

### *Destination and Dollar Amounts of Textile Machinery Grants (April 1948-May, 1952)*

| | | | |
|---|---|---|---|
| Austria | $ 5,441,000 | Norway | 2,197,000 |
| Belgium-Luxembourg | 6,568,000 | Portugal | 377,000 |
| Denmark | 3,909,000 | Sweden | 1,391,000 |
| France | 13,530,000 | Trieste | 3,000 |
| Germany (Fed. Rep.) | 7,171,000 | Turkey | 10,500 |
| Greece | 2,793,000 | United Kingdom | 25,577,000 |
| Iceland | 78,000 | Yugoslavia | 220,000 |
| Ireland | 767,000 | Formosa | 86,000 |
| Italy | 17,607,000 | Philippines | 105,000 |
| Netherlands | 9,069,000 | Indochina | 22,000 |
| Dutch East Indies | 110,000 | Indonesian Republic | 259,000 |
| | | Total | $97,290,000 |

standards, TCA programs are currently under way in 35 countries.

The majority of TCA projects are concerned with the problem of food and increasing food production. "Point Four" activity in regard to clothing or textiles has been so limited as to be considered insignificant.

**Aid to Occupied Countries (Japan).** A second administrative form of assistance is that which was carried out by U. S. military forces in occupied territories. In terms of aid to textile industries of foreign countries, this has been confined practically entirely to Japan under the rehabilitation program of Supreme Commander, Allied Powers.

It is authoritatively reported that the SCAP program included no gifts of machinery nor did it furnish technical assistance.

Therefore the aid provided to the Japanese textile industry is measurable in dollar amounts of raw cotton shipped to Japan, as follows:

| | |
|---|---|
| 1948 | $ 44,541,000 |
| 1949 | 101,443,000 |
| 1950 | 219,380,000 |
| 1951 | 182,364,000 |
| Total | $547,728,000 |

**Aid by Mutual Security Agency.** The third general category of governmental aid is administered by the Mutual Security Agency, which has replaced the former Economic Cooperation Administration. In accordance with the objectives originally set forth by the Marshall Plan, ECA-MSA activities aimed to help speed the recovery of war-ravaged European allies and in general to bolster up the economies of more highly developed nations as distinguished from the underdeveloped areas being assisted by "Point Four" projects.

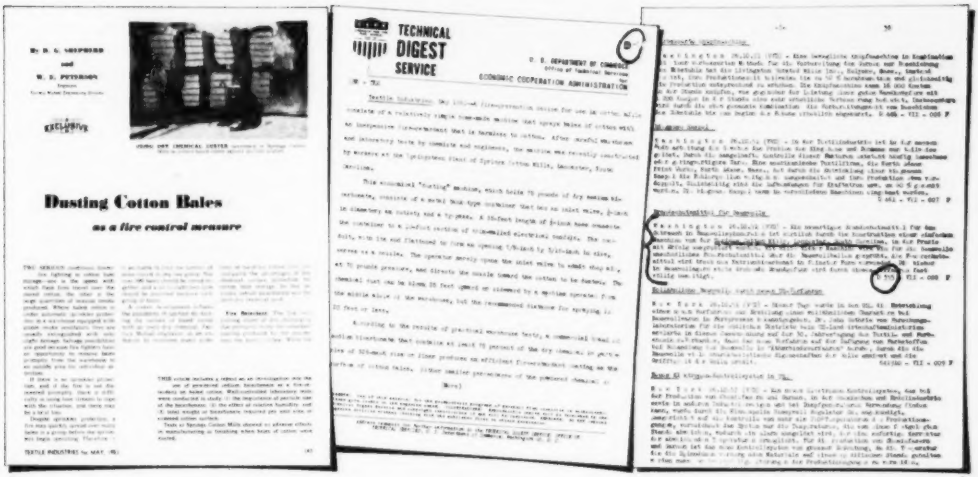
With the enactment of the Mutual Security Act of 1951, which brought MSA into being, the nature and purpose of U. S. foreign assistance shifted from a program designed to achieve increased production abroad to a program of aid primarily in support of a growing defense effort, and the maintenance of economic conditions essential to such an effort. This assistance is provided through numerous kinds of loan arrangements or direct grants-in-aid. The scope of MSA activity has gradually been broadened so that it now includes Far East programs as well as those in Europe.

According to the requirements of the Mutual Security Act, each country receiving aid from the Mutual Security Agency is obliged to deposit, in a special account, amounts of its own currency equivalent to the dollar cost of the goods and services to be received. An amount not less than 5 per cent of the local currencies or so-called counterpart fund deposited is reserved for use by the United States. The remaining 95 per cent is available to the depositing countries and may be withdrawn only when MSA has agreed to its proposed use.

MSA officials take pains to point out that America's furnishing of dollars for commodities, machinery, and technical assistance does not imply that the European business man obtains the materials without cost. It is explained that a French textile manufacturer, for example, who needs to buy cotton must place his "counterpart" of francs with the French government for the full market value of the fiber he intends to purchase. He gains no competitive advantage, MSA spokesmen contend; he benefits from the fact that foreign exchange is made available at a time when he does not have American dollars and his government lacks U. S. credit.

Grants which have given asistance to textile interests in this manner are allocated for three general purposes: *the purchasing of raw cotton, acquisition of textile machinery, and technical assistance in the form of specialists sent from the United States to a foreign country or "productivity teams" from overseas which have visited American plants.* Included in the technical assistance program are informational bulletins issued periodically by the U. S. Department of Commerce for overseas distribution by MSA. (See accompanying illustrations for one phase of the technical assistance program.)

Dollar grants for raw cotton constitute the largest item in the entire ECA-MSA record of procurement authorizations since the inception of the foreign aid program in 1948. Expenditures for cotton fiber, except linters and ex-



**Dusting Cotton Bales**

***as a fire control measure***

TECHNICAL DIGEST SERVICE

Left, the article is published in TI. This one describes a method of dusting cotton bales to prevent fires.

Center, a digest is made of it by Office of Technical Services; mailed to productivity centers in Marshall Plan countries.

Right, foreign language abstract is made from digest, goes to twenty thousand business and industrial firms in that country.

## *One Phase of Technical Assistance Program*

The editors of TEXTILE INDUSTRIES frequently receive requests from the Office of Technical Services, Department of Commerce, for permission to digest articles which have appeared in the publication and to supply the Office of Technical Services with photographs or drawings to illustrate the stories.

Such requests have been honored by the editors.

The accompanying illustrations show the step by step procedure for getting technical information appearing in the American press to foreign industrialists. (1) The article appears in TI. (2) A digest is prepared by the Office of Technical Services in English and sent to productivity centers in all Marshall Plan countries. (3) An abstract of the digest is translated into the foreign language by the productivity center. Carrying the same code number as the digest, the abstract is published in a newsletter which goes to approximately twenty thousand business and industrial firms.

Should a mill desire more information, a copy of the magazine is made available to the mill, or the mill management may initiate steps to secure the additional data from the productivity center.

The Frankfurt, Germany, productivity center's office handles approximately two hundred incoming inquiries a day.

cluding cotton waste, exceed all others in a long list of goods, feeds, fertilizers, fuels, metals, ores, machinery, machine tools, parts, vehicles, motors, and similar commodities raw, semi-finished, or finished.

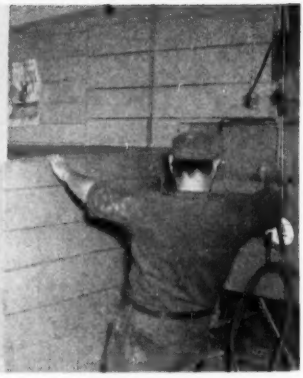
The cumulative grand total of procurement authorizations for raw cotton, except linters, from 1948 through May of 1952 reaches $1,526,114,000 in round numbers, according to a report by MSA.

Destinations and dollar amounts of raw cotton allocations during the five-year period are listed in the accompanying box. Also in this box are the destinations and dollar amounts of textile machinery grants.

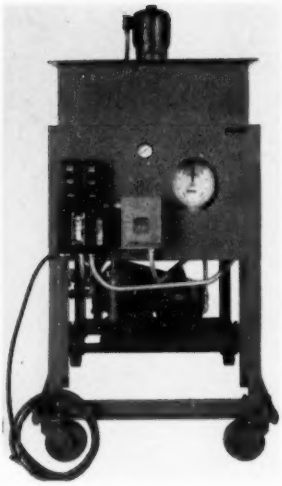
Grants-in-aid provided by MSA for textile machinery and equipment total close to $100,000,000 for the five years ending in May of 1952. Since MSA has taken over for ECA, a marked decline in textile machinery assistance has been observed. Two reasons are advanced: A greater proportion of dollar needs is now being directed to defense programs, the manufacture of weapons and war materiel; and European makers of textile machinery have rebuilt their facilities to the point where they are better able to meet the needs of domestic mills than was the case three or four years ago.

Parenthetically, under terms of MSA agreements no foreign country is permitted to use dollars to buy in America any commodities, supplies, or machinery which are obtainable from home sources with

(*Continued on page* 134D)



**SPRAYING STOCK** in a large blending pit at Star Woolen Co.



**"DASH-BOARD" CONTROL** of emulsion application is provided by specially designed spray machine, close-up of which is presented at the right.

# Spraying Is a Science at Star Woolen Company

***A spraying machine, engineered for one of America's outstanding garnett mills, adds a touch of technology to waste reclamation.***

EXCLUSIVE

**Staff Prepared**

THE IMPORTANCE of an evenly dispersed oil emulsion on stock ready to be picked and garnetted could hardly be overestimated. Proper application of lubricant means salvage of longer, more valuable fiber lengths from clips and other waste. It also means protection for picker lags, garnett wire, and cylinder clothing.

The quality of lubrication is no better than the method of application. At Star Woolen Company, Cohoes, N. Y., considerable progress has been made in the field of emulsion spraying. This company has come a long way from the crude garden sprinkler can still common in the industry. At Star, spray machines are in use which allow "dash-board" control of emulsion application. Machines are designed so that standard spray specifications, optimum for each class of waste, could be developed and reproducibly applied.

Essentially, the typical unit consists of a 100-gallon tank mounted on large surface, rubber casters. A partial, piano-hinged lid on the top of this tank facilitates filling. Contents of the tank are continually agitated by a ¼ hp motor-driven mixer. This assures homogeneity of the oil-water mixture, the first requirement for satisfactory oiling.

The pump unit consists of a ¾ hp Viking gear-type pump with a maximum capacity of 10 gallons per minute at 50 psi. The flow is metered by a Niagara Electricontact meter, calibrated to measure up to 20 gallons, with an average flow rate of 10 gallons. A manual reset button will set the unit for the next cycle of spraying.

The unit incorporates a ¾-inch line strainer, lined with 100-mesh Monel screen for protecting the nozzle orifices from clogging. A hose leading from the machine connects with a twin-nozzled aluminum spray boom equipped with

(*Continued on page* 237)

# Inventory Control for Hosiery Packaging Materials

## *cuts costs, simplifies warehousing at Carol-May Finishing*

**Staff Prepared**

EVERY WEEK, Carol-May Finishing Co., Inc., Concord, N. C., finishes and packages between 12,000 and 14,000 dozen pairs of ladies' hose for its knitting mill customers. This finisher regularly handles more than 250 different styles in the grey, and these hose go out under 110 different wraps and labels. Obviously, the warehousing and inventorying of packaging materials is a major operation. However, the installation of a new system has reduced packaging materials inventory by 40%, cutting not only the space required for warehousing but the capital investment tied up in these goods.

The packaging of ladies hosiery involves the use of more items than the average customer realizes. There are the boxes, the printed paper wraps which cover the boxes, printed or plain tissues, printed or plain cellophane envelopes, cellophane folders, inserts, and transfers. Not all of these are used in every instance, but all must be available to fulfill the packaging specifications of many different customers.

Tissues, folders, inserts, and transfers are small, easily stored items, and the warehousing has never been a problem. Wraps are the paper box wrappers on which are printed the knitter's trade mark, brand name, and various decorations, and they are furnished to the box manufacturer to cover the white, book lined board boxes used to package the stockings, three pairs to a box, for retail sale. The box manufacturers store wraps, so Carol-May merely keeps an inventory of the supply on hand at the box plant, ordering more from the printers as needed.

The major problem, before the installation of the new system, was the storage of finished boxes. As

**DAILY TABULATING LOG** is filled out as customer's orders are received. The order illustrated is for finishing and packaging 600 dozen pairs of hose. The order will require 2400 boxes; three pairs are packed to a box. The Log shows 2556 box wraps on hand at the box maker. Filling the customer's order will reduce the supply to 156, far below a satisfactory minimum. Therefore, as shown in the columns at right, an order is placed with the printer for 5000 wraps to replenish the box maker's supply.

**Daily Tabulating Log** Date 1/2/52

| Processing Order No. | Customer | Customer's Order No. | Style | Dozens of Pairs | Brand Name | Wraps on Hand | Box Maker | To be Ordered | Supplier | Purchase Order No. |
|---|---|---|---|---|---|---|---|---|---|---|
| A2403 | ABC Hosiery | 7239 | X40 | 600 | Rose Crest | 2556 | Gay | 5,000 | Ace Printing Co. | 47347 |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

**Wrap Inventory**

Brand Name: Rose Dust
Supplier: Ace Printing Co
Box Mfg.: Gay
Max 3,000
Min 2,500

| Date | Processing Order No. | Purchase Order No. | Number Ordered | Number Issued | Balance |
|---|---|---|---|---|---|
| | | | | | 2,556 |
| 1/7/52 | | 47347 P | 5,000 | | 7,556 |
| 1/7/52 | A2493 | | | 2,400 | 5,156 |

**WRAP INVENTORY CARD** is filled in to show an additional 5000 wraps ordered, and this number is added to the "balance" column. When the order has been delivered, a check mark is placed beside the figure in the "Ordered" column. When the order is placed for the boxes to be made, the 2400 wraps used are entered under "Issued", and deducted from the balance. Here a check mark indicates actual delivery of the wrapped boxes.

**Packaging Materials Inventory**

Article: Tissue
Brand Name: Rose Dust
Supplier: American
Max 20,000
Min 5,000

| Date | Processing Order No. | Purchase Order No. | Number Ordered | Number Issued | Balance |
|---|---|---|---|---|---|
| | | | | | 8,200 |
| 1/7/52 | A2493 | | | 7,200 | 1,000 |
| 1/7/52 | | 47348 P | 15,000 | | 16,000 |

**PACKAGING MATERIALS INVENTORY** is also a card file in which there is a card for each minor packaging item. This card shows the deduction from the balance for the 7200 tissues (3 tissues per box) needed for the order and an addition to the balance recording the purchase of tissues to replenish the supply.

**Box Inventory**

Brand Name:
Box Mfg.:

| Date | Processing Order No. | Purchase Order No. | Number Ordered | Number Issued | Balance |
|---|---|---|---|---|---|
| | | | | | 14 |
| 1/7/52 | | 47349 P | 2,400 | | 2414 |
| 1/7/52 | A2443 | | | 2,400 | 14 |
| 1/17/52 | A2443 | | | 3 | 11 |

**BOX INVENTORY** differs in that only a very small supply of extras is kept on hand to replace waste. Note that the Rose Dust box order was placed on the same day the customer's order was received. The three boxes issued ten days later were to replace three broken in packaging.

everyone connected with the hosiery business knows, there is nothing stable about the hosiery market. Carol-May had to keep on hand a large enough stock to supply the fluctuating orders of the customers, and the warehouse space required to store boxes of all the various brand names was so great that space had to be rented from one end of town to the other.

These stored boxes showed a high percentage of waste as a result of damage and age, and the cost of warehouse space and the investment tied up in boxes was expensive.

**New System.** The new system is based upon the idea of ordering boxes only as actually required. When an order to finish a shipment of hose is received by Carol-May, the order then goes to the box manufacturer to make up the number of boxes required to package the hose, and a delivery date is specified so that the boxes are received on or about the day the hose come out of finishing and are ready to be boxed. This means that usually empty boxes are stored for only a day or two at a time and the only boxes on hand are those to be used to box an order in process in the finishing plant.

An accurate inventory system is needed to have this system work. Carol-May has worked out a system which assures correct timing and yet is so simple that there is seldom a delay in delivery of finished and packaged hose.

**Step 1.** An order is received from a customer to finish a quantity of hose. An office clerk enters pertinent data from the order on a

**STEP 1.** An order is received from a customer to finish a quantity of hose.

Daily Tabulating Log. This will show the number of dozen hose to be finished, the kind of box to be used, and the name of the box manufacturer.

The clerk then looks in a card file which contains a separate inventory card for each type of wrap, and notes the number of wraps on hand at the box manufacturer's plant of the type needed for the order. She enters this number on hand on the Daily Tabulating Log, and it can then be seen whether there is a sufficient supply. If not, the number of wraps to be ordered and the name of the supplying printer are entered on the Log, and a purchase order is made and mailed to the printer.

An effort is made to keep a sufficient supply of wraps at all times, and a new order is placed before the supply gets too low. As has been pointed out, wraps are not a storage problem for they go directly to the box plant from the printer, Carol-May doing nothing more than keeping an inventory and placing orders as needed.

**STEP 2.** Order clerk makes up a process order and makes the identification tickets.

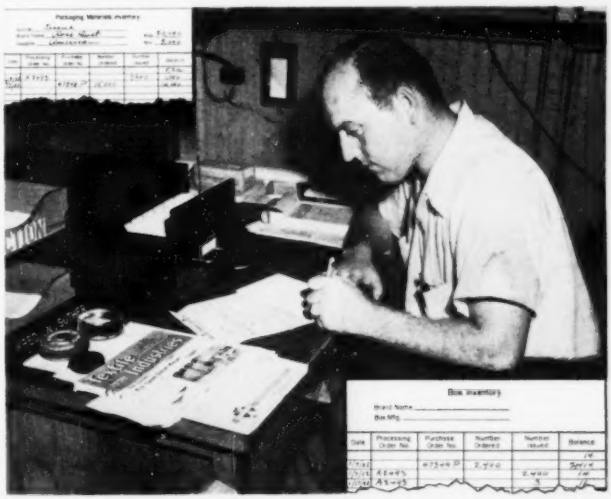
**Step 2.** The customer's order then goes to the Order Clerk, who makes up a process order, duplicates it and makes the identification tickets which accompany the goods through process.

**Step 3.** A duplicate of the order goes to the Inventory Control Clerk, whose job it is to make sure boxes and packaging materials will be available when the order is ready for shipment. He first checks his perpetual inventory cards for the minor items, such as tissues, folders, and inserts, and deducts the number required for the order from the inventory balance. If any items are thereby reduced below an adopted minimum, an order is placed through the Purchasing Department, and the amount ordered is added to the balance on the inventory card.

The clerk then turns to the inventory of boxes. This card, as compared to the inventory cards for wraps and minor packaging items, will not show a sufficient supply of the required boxes on hand. It may show only a few that were left over as extras from the last order. Therefore, he immediately places an order for the exact number of boxes needed, and enters this number on his inventory card and adds it to the balance. He also shows the boxes as issued and immediately deducts the full number from the balance, leaving only the few extras.

When the boxes are actually received from the box maker a few days later, the clerk places a check mark beside the figure in the "Ordered" column, and when the boxes have been packed and shipped, he similarly checks the figure in the "Issued" column. At that time he also corrects the number of extras in the balance column in the event that any boxes were wasted in the packaging operation. *(Continued next page)*

**STEP 3.** A duplicate order goes to the Inventory control clerk.



**Step 4.** When the Inventory Clerk's order for boxes is made, a copy goes through the office, and the Office Clerk again goes to the Wrap inventory card and this time actually deducts from the balance the wraps needed to cover the boxes being ordered.

**Step 5.** When materials are received, they are checked against the purchase order by the receiving clerk. He sees that they are in good condition and meet the order specifications. He has the materials stored and reports their arrival to the Inventory Control Clerk. A copy of the receiving slip also goes to the accounting department so invoices may be paid.

**Results.** Before the installation of the new system, such a large number of empty boxes were kept on hand for so long a time that it was almost impossible to avoid this type of storage. Note that wrappings become broken and boxes spill out onto the floor where they are soon broken and soiled. Space was at a premium so that packages of boxes were stored in the aisles and against windows.

**Now,** relatively few boxes are kept on hand and they stay in storage only a few days. Steel shelves are used for this temporary storage and they are separated according to brand name. Waste has been reduced and box wraps are always bright and clean. Size and style data are printed on the box ends after packaging the stockings.

EXCLUSIVE

## The Relation of

# Mill Processing Conditions to Yarn and Fabric Properties

### *A Study of the 17-Mill Test Data Obtained on 1950 Crop*

By J. E. Dougherty, L. H. Dance, and W. H. Martin*

THE ECONOMICS of the textile industry are inextricably related to the types, arrangements, and adjustments of the machines employed in cotton processing. The selection of the mill organization and maintenance program to produce a product of a given quality at the lowest cost is a problem which continually confronts mill management.

At the present time, this selection largely depends upon the recommendations of machinery manufacturers and men who have had considerable experience in processing cotton. The labyrinth of equipment and conflicting opinions offered by both these well-meaning sources often makes a proper decision extremely difficult.

Unfortunately, there are few reliable sources of factual information concerning the relation of mill processing to product quality. The need for establishing such sources through industry-wide research is thus apparent.

One of the first attempts to obtain information concerning the effect of cotton ginning conditions upon yarn and fabric properties on an industry-wide basis was the project jointly sponsored by the National Cotton Council and the American Cotton Manufacturers Institute, and currently referred to as the "17 - Mill Ginning - Spinning Test."

*As a by-product of this investigation, complete information was obtained concerning both mill processing conditions and product quality. For the first time, data became available which enabled these two factors to be correlated.*

The accompanying report summarizes the findings made by a group at the Institute of Textile Technology and presented before representatives of participating mills and guests at the Eighth Annual Membership Meeting held at the Institute on April 30, 1952. The data are presented in such a way that they should be of particular value to the mill man.

The usefulness of the data would undoubtedly have been increased had a control cotton been processed by each of the participating seventeen mills. It is hoped, however, that the data and conclusions presented will stimulate sufficient interest to cause further industry-wide tests to be made so that the information now greatly needed by the mills will be made available.

The Institute is ready at all times to assist member mills in acquiring data of this type which will enable them to improve their economic position in the textile industry.

JACK COMPTON
*Technical Director*
*Institute of Textile Technology*

***FROM THE INSTITUTE OF TEXTILE TECHNOLOGY**

**Research Report No. 47**

**FOR REPRINTS** *of this article, write to Editor, "Textile Industries," 806 Peachtree St., N. E., Atlanta 5, Georgia.*

THIS REPORT is concerned with the effects of various processing conditions in seventeen cotton mills making 80x80 print cloth on the properties of yarns and fabrics produced by the mills. The information concerning the cottons used, mill organizations, and test results was obtained from an industry-wide test, jointly sponsored by the National Cotton Council and American Cotton Manufacturers Institute, to determine the effects of different ginning conditions on product quality.

Since the test was not originally designed to study the effects of manufacturing variables, the results of the investigation of processing conditions cannot be considered conclusive. Rather, the conclusion derived from the data should be regarded as indicative of relationships which may exist between methods of manufacture and quality of products. These trends should be more thoroughly investigated in tests specifically designed to show these relationships.

Bearing in mind these limitations, the results of the study support the following trends:

► 1. There is a correlation between yarn uniformity and yarn strength, the more uniform yarns being stronger yarns, the less uniform yarns being weaker.

► 2. Yarn strength affects fabric strength. Usually the stronger yarns produce the stronger fabric.

► 3. More uniform and stronger yarns can be produced from higher doublings throughout processing and from lower drafts during spinning.

► 4. There is a highly significant correlation between neps per grain in card web and imperfections per grain in yarn.

► 5. Fewer neps in card web result from:

a. less handling and beating in opening and picking,

b. lower production rates on the picker,

c. lighter weight laps being fed to the card,

d. lower drafts in carding,

e. lower doffer speeds in carding,

f. producing heavier weights of sliver on the card,

g. removing larger percentages of the total waste during carding,

h. removing larger amounts of fiber with trash during opening, picking and carding.

## *Introduction*

AT SOME TIME prior to the harvesting of the 1950 cotton crop, the National Cotton Council of America, assisted by the American Cotton Manufacturers Institute, undertook a study to investigate on a commercial scale the effects of various ginning conditions on the spinnability of cotton and on the quality of finished products. The study was conducted on 1950 crop cottons from two areas of growth.

The variables that were investigated included methods of harvesting, types of ginning equipment, and processing conditions at the gins. The various cottons under study were distributed to 17 selected mills where they were spun into yarns and woven into 80 x 80 print cloth according to regular production methods. The results of the test, showing the effects of various ginning conditions, have been published in a National Cotton Council of America report, dated March 31, 1952, entitled "Cotton Fiber Properties, Spinning Efficiency and Fabric Quality as Affected by Ginning Practices" (1).

At the January 1952 meeting, the Technical Advisory Committee of the Institute of Textile Technology discussed the 17-mill ginning spinning test. Members of the committee believed that much valuable information on the effects of ginning conditions on yarn and fabric quality was obtained as a result of the test and that further study of the data from the point-of-view of mill organization would be of interest to the Institute membership. Since detailed information was available concerning mill organizations, machine speeds and settings, as well as results of tests of yarn and fabric properties, and because of the interest of the Technical Advisory Committee in exploring the effect of various mill processing conditions on the quality of products manufactured from the test cottons, a project was initiated for this purpose.

Through the assistance of John T. Wigington, Director of the Technical Service Division of the American Cotton Manufacturers Institute, and representatives of the 17 mills involved in the test, the ITT was able to obtain rather complete information on the organizations used by the participating mills as well as other pertinent data. Results of the study indicated that some possible correlations between manufacturing variables and product quality existed. These correlations are discussed in this report.

This report has been subdivided into three parts. Part I is concerned with a description of the cottons used in the test and details of the organizations used by the 17 mills which processed the cottons. Part II attempts to correlate manufacturing variables with yarn uniformity and yarn and fabric strength. Part III consists of a discussion of possible relationships between processing conditions and neps in card web, yarn, and fabric.

# *I. Test Cottons and Mill Organizations*

## *Test Cottons*

Listed in Table I are the cottons used in the study. Also indicated are the numbers for the participating mills, showing the particular cotton which each mill processed. Identification symbols are also shown as a Cotton Code for the various cottons and are repeated in other tables used in the report to permit easy reference to the type of cotton processed. The cotton received by each mill consisted of 25 bales, broken down into 5 lots of 5 bales each. A different ginning condition was represented by each 5-bale lot.

As a result of the allocation of cottons as shown in Table I, it may first appear as though each of the 17 mills had processed 5 different cottons, no one of which was similar to any other cotton run by any other mill. This situation would make it difficult to study

the effect of manufacturing variables on yarn and fabric quality, inasmuch as the ideal plan for such an investigation would call for *one* standard cotton to be processed under different conditions in the various mills.

However, close study of test results indicated that regardless of harvesting method, gin equipment or ginning condition, *all of Area 1 cottons had the same fiber properties, including grade, staple length, fineness, and strength. The same was true for all of the Area 2 cottons.* The averages of these properties for the Area 1 (Delta) cotton and the Area 2 (California) cotton are listed in Table 1.

As a result of the similarity in fiber properties, it was believed safe to compare manufacturing conditions in mills processing cottons from the same area of growth. It was also decided to use the average of test results on the five cottons ginned under different conditions for each mill. It seemed logical to assume that if a certain ginning condition affected the product quality in one mill, it should have a similar effect in other mills.

Another aspect of the ginning spinning test that proved helpful was the fact that each participating mill forwarded samples of its test cottons to the United States Department of Agriculture Spinning Laboratory at Clemson, S. C. There all of the cottons used in the study were manufactured into yarn on the same equipment. Thus, while no control cotton was used in the 17 mills, the spinning laboratory did provide a controlled set of processing conditions for the various cottons. How this situation proved to be of assistance is explained later in the report.

**Table 1. Cottons Processed by Various Mills**

| | | GIN | MILL NO. | COTTON CODE |
|---|---|---|---|---|
| AREA 1 | HAND PICKED | GIN X | MILL 10 | XX 1 |
| | | GIN Y | MILL 15 | YY 1 |
| | | GIN Z | MILL 4 | ZZ 1 |
| | FIRST MCH. PICKED | GIN X | MILL 11 | XX2 |
| | | GIN Y | MILL 17 | YY2 |
| | | GIN Z | MILL 5 | ZZ 2 |
| | SECOND MCH. PICKED | GIN X | MILL 12 | XX3 |
| | | GIN Y | MILL 18 | YY3 |
| | | GIN Z | MILL (NO COTTON) | ZZ3 |

1-1/32" SLM
FINENESS - 4.3
74,000 LBS./SQ.IN.

| | | GIN | MILL NO. | COTTON CODE |
|---|---|---|---|---|
| AREA 2 | HAND PICKED | GIN X | MILL 7 | X 1 |
| | | GIN Y | MILL 13 | Y 1 |
| | | GIN Z | MILL 1 | Z 1 |
| | FIRST MCH. PICKED | GIN X | MILL 8 | X2 |
| | | GIN Y | MILL 14 | Y2 |
| | | GIN Z | MILL 2 | Z2 |
| | SECOND MCH. PICKED | GIN X | MILL 9 | X3 |
| | | GIN Y | MILL 16 | Y3 |
| | | GIN Z | MILL 3 | Z3 |

1-1/16" M
FINENESS - 4.4
84,000 LBS./SQ.IN.

## *Mill Organizations*

Manufacturing data for the 17 mills participating in the test are listed in Table 2. All of the mills (with one exception) are producers of 80 x 80 print cloth, and the organizations shown represent their regular production practices. The exception is Mill No. 18 which is a sheeting mill that substituted for an originally scheduled print cloth mill that was unable to participate in the test. In attempting to correlate processing conditions with product quality, Mill No. 18 was studied in opening through drawing, but not in roving and spinning, as the yarn and fabrics produced by Mill No. 18 were quite different from those manufactured by the other 16 mills.

Under the column headed "Opening" in Table 2, are listed the types and sequence of opening and cleaning machines used, as well as the production rate through the opening line. It will be seen that a variety of types and numbers of machines are represented, ranging from Mill No. 1 with two machines, to Mill No. 4 where eight pieces of equipment were used.

The information tabulated for picking indicates the various types of beaters used, with the carding beater being the most common. Total blows per inch vary from 37 for Mill No. 13 to 98 for Mill No. 4. Lap weights range from 13 to 15 oz/yd and production rates from 250 lb/hr in Mill No. 9 to 451 lb/hr in Mill No. 15.

The carding drafts shown in Table 2 are actual drafts, calculated from weight of lap fed and weight of sliver delivered, and vary from 107 for Mill No. 11 to 138 for Mill No. 5. The lightest card sliver produced was in Mill No. 5 with 46 grains/yd, and the heaviest was 55 grains/yd in several of the mills listed. Production rates during carding show a spread from 6.8 lb/hr in Mill No. 10 to 11.8 lb/hr in Mill No. 8. The slowest licker-in speed is 410 rpm in Mill No. 1 while the fastest is 502 rpm in Mill No. 15. Cylinder speeds range from 156 rpm for Mill No. 2 to 183 for Mill No. 15. The doffer in Mill No. 10 makes only 5.5 rpm while that in Mill No. 15 revolves at 10.75 rpm.

The information listed under "Drawing" consists of the types of machinery used, the doublings, draft, weight of lap or sliver produced at each process, and the rpm of the front roll and calender roll. A variety of types of drawing equipment was found in the participating mills. In seven cases the Saco-Lowell Controlled Draft system was used, with 16 ends being doubled on a lap winder and fed to a 5-roll drawing frame, making a total of 16 doublings during drawing. Six mills ran two processes of Saco-Lowell 4-roll cushion drawing, 6 ends fed in each process, for 36 total doublings.

Mill No. 18 used two processes of Saco-Lowell 4-roll metallic drawing, also with 36 total doublings. Two processes of Whitin 4-roll cushion drawing, with 8 ends up, were used by Mill No. 3 to produce 64 doublings.

The two extremes were represented by Mill No. 8 with one process of Saco-Lowell 4-roll cushion drawing for total doublings of 6 and by Mill No. 7 which followed one process of Whitin 4-roll cushion drawing with a lap winder and 5-roll drawing frame to make a total of 96 doublings during drawing.

The section of Table 2, headed "Roving" shows the type of machine used in each process for warp and filling yarn, the number

## *Table 2*. Organization and Production Data from Mills*

| Cotton Code | Mill No. | OPENING | | | PICKING | | | | CARDING | | | DRAWING | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Equipment | | Lbs./Hr. | Beaters | Type | Hour./in. | Prod. | Speed | R.P.M. | Machine | Lbs. | Dr. | Gr. Yd. Del. | F. R. | Cal. |
| AREA 1 | | | | | | | | | | | | | | | | | |
| ZZ 1 | 4 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. COND. #11<br>4. LAT. OPR. #12 | 5. COND. #11<br>6. LAT. OPR. #12<br>7. COND. #11<br>8. SUP. CLNR. | 1268 | No. 1<br>No. 2 | CARDING<br>CARDING | 37<br>61 | 730 lbs. hr.<br>18 oz./yd. | 1148 DR.<br>40 L. GR. SL.<br>5 lbs. hr. | LI<br>CYL.<br>DOFF | 455<br>165<br>6.7 | LAP WINDER<br>S. L. CONT. DR. | 16<br>1 | 1<br>14.5 | 792<br>44.5 | 386 | 192 |
| ZZ 2 | 5 | 1. BL. FDR.<br>2. COND. #11<br>3. LAT. OPR. #12 | 4. SUP. CLNR. | 1042 | No. 1<br>No. 2 | CARDING<br>CARDING | 22.9<br>19.44 | 442 lbs. hr.<br>14.5 oz./yd. | 138 DR.<br>40 GR. SL.<br>6.5 lbs. hr. | LI<br>CYL.<br>DOFF | 446<br>167<br>8.5 | LAP WINDER<br>S. L. CONT. DR. | 16<br>1 | 1<br>13.68 | 730<br>53 | 315 | 151 |
| XX 1 | 10 | 1. F4 FDR.<br>2. LOW. GVR.<br>3. F4 SL. FDR. | 4. LAT. OPR. #9<br>5. VERT. OPR.<br>6. COND. #2 | 1747 | No. 1<br>No. 2<br>No. 3 | 3 BLADE<br>2 BLADE<br>CARDING | 15.06<br>13.65<br>10.35 | 380 lbs. hr.<br>14.5 oz./yd. | 124 DR.<br>52 GR. SL.<br>6.4 lbs. hr. | LI<br>CYL.<br>DOFF | 402<br>170<br>8.5 | S. L. 4 ROLL CUSH.<br>BREAKER<br>FINISHER | 6<br>6 | 3.4<br>5.8 | 58<br>60 | 405<br>405 | 230<br>230 |
| XX 2 | 11 | 1. BL. FDR.<br>2. SUP. CLNR.<br>3. SUP. CLNR. | 4. COND. #11 | 918 | No. 1<br>No. 2 | 2 BLADE<br>CARDING | 13.56<br>10.13 | 368 lbs./yd.<br>13.5 oz./yd. | 107.4 DR.<br>35 GR. SL.<br>5.6 lbs. hr. | LI<br>CYL.<br>DOFF | 448<br>165<br>7.6 | S. L. 4 ROLL CUSH.<br>BREAKER<br>FINISHER | 6<br>6 | 6.11<br>8.11 | 54<br>53 | 395<br>395 | 215<br>215 |
| XX 3 | 12 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. COND. #11<br>4. LAT. OPR. #12 | | —— | No. 1<br>No. 2<br>No. 3 | 2 BLADE<br>3 BLADE<br>CARDING | 33.96<br>22.75<br>28.39 | 490 lbs. hr.<br>13.5 oz./yd. | 113.4 DR.<br>37 GR. SL.<br>6.4 lbs. hr. | LI<br>CYL.<br>DOFF | 448<br>165<br>8.0 | LAP WINDER<br>S. L. CONT. DR. | 16<br>1 | 1.04<br>13.1 | 802<br>55 | 385 | 204 |
| YY 1 | 15 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. LAT. OPR. #12 | 4. LAT. OPR. #12<br>5. COND. #11<br>6. VENTRIF AIR | 1900 | No. 1<br>No. 2<br>No. 3 | BUCKLEY<br>2 BLADE<br>CARDING | 40.5<br>32.94<br>13.15 | 401 lbs. hr.<br>14 oz./yd. | 127.5 DR.<br>44 GR. SL.<br>10.5 lbs. hr. | LI<br>CYL.<br>DOFF | 502<br>185<br>10.75 | LAP WINDER<br>S. L. CONT. DR. | 16<br>1 | 1<br>14.2 | 766<br>52 | 330 | 198 |
| YY 2 | 17 | 1. BL. FDR.<br>2. COND. #11<br>3. VERT. OPR. | 4. COND. #11<br>5. LAT. OPR.<br>6. COND. #11 | 1350 | No. 1<br>No. 2 | 2 BLADE<br>CARDING | 47.74<br>41.29 | 400 lbs. hr.<br>15 oz./yd. | 126 DR.<br>52 GR. SL.<br>9.0 lbs. hr. | LI<br>CYL.<br>DOFF | 425<br>168<br>9.5 | LAP WINDER<br>S. L. CONT. DR. | 16<br>1 | 1<br>14.6 | 802<br>50 | 310 | 180 |
| YY 3 | 18 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. LAT. OPR. #12 | 4. LAT. OPR. #12<br>5. SUP. CLNR. | 1200 | No. 1<br>No. 2<br>No. 3 | 3 BLADE<br>2 BLADE<br>CARDING | 29.8<br>17.8<br>30.9 | 275 lbs. hr.<br>13 oz./yd. | 113.7 DR.<br>36 GR. SL.<br>11 lbs. hr. | LI<br>CYL.<br>DOFF | 436<br>164<br>9.5 | S. L. 4 ROLL MET.<br>BREAKER<br>FINISHER | 6<br>6 | 5.66<br>5.78 | 53<br>54 | 316<br>294 | 257<br>223 |
| AREA 2 | | | | | | | | | | | | | | | | | |
| Z 1 | 1 | 1. BALE BREAKER<br>4. VERT. OPENER | | 602 | No. 1<br>No. 2<br>No. 3 | 2 BLADE<br>CARDING<br>CARDING | 12.24<br>10.77<br>23.9 | 308 lbs. hr.<br>13 oz./yd. | 108.5 DR.<br>52.5 GR. SL.<br>9.75 lbs. hr. | LI<br>CYL.<br>DOFF | 410<br>170<br>8.0 | LAP WINDER<br>S. L. CONT. DR. | 16<br>1 | 1<br>16.2 | 840<br>52 | 295 | 180 |
| Z 2 | 2 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. COND. #11 | 4. LAT. OPR. #12<br>5. COND. #11<br>6. SUP. CLNR. | 1026 | No. 1<br>No. 2<br>No. 3 | BUCKLEY (ALD)<br>2 BLADE<br>CARDING | 31.27<br>17.65<br>62.06 | 347 lbs. hr.<br>17.6 oz./yd. | 109.5 DR.<br>54.4 GR. SL.<br>9.0 lbs. hr. | LI<br>CYL.<br>DOFF | 420<br>156<br>8.0 | S. L. 4 ROLL CUSH.<br>BREAKER<br>FINISHER | 6<br>6<br>6 | 5.9<br>6.0<br>6.0 | 56<br>56<br>56 | W.F.<br>394-411<br>390-420 | W.F.<br>274-288<br>249-260 |
| Z 3 | 7 | 1. BL. FDR.<br>2. THORNING. CLNR.<br>3. SUP. CLNR. | 4. LAT. OPR. #12<br>5. PERFTD. PIPE | —— | No. 1<br>No. 2<br>No. 3 | 3 BLADE<br>2 BLADE<br>CARDING | 29.1<br>27.4<br>16.5 | 376 lbs. hr.<br>14 oz./yd. | 115.4 DR.<br>54 GR. SL.<br>8.7 lbs. hr. | LI<br>CYL.<br>DOFF | 461<br>170<br>7.2 | WH. 4 ROLL CUSH.<br>BREAKER<br>FINISHER | 6<br>6<br>6 | 7.98<br>7.98<br>7.98 | 56<br>56<br>56 | 322<br>314<br>314 | 157<br>154<br>154 |
| X 1 | 7 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. COND. #11 | 4. LAT. OPR. #12 | 1578 | No. 1<br>No. 2 | CARDING<br>CARDING | 19.4<br>19.9 | 339 lbs. hr.<br>14 oz./yd. | 111.4 DR.<br>35 GR. SL.<br>9.75 lbs. hr. | LI<br>CYL.<br>DOFF | 423<br>172<br>7.45 | WH. 4 ROLL CUSH.<br>LAP WINDER<br>S. L. CONT. DR. | 6<br>16<br>1 | 6.97<br>1<br>16 | 55<br>880<br>55 | 354<br>559 | 174<br>176 |
| X 2 | 8 | 1. BL. FDR.<br>2. SUP. CLNR.<br>3. COND. #11 | 4. LAT. OPR. #12<br>5. COND. #11 | 1809 | No. 1<br>No. 2<br>No. 3 | 3 BLADE<br>2 BLADE<br>CARDING | 19.3<br>19.2<br>19.7 | 384 lbs. hr.<br>14.5 oz./yd. | 130.4 DR.<br>48 GR. SL.<br>11.8 lbs. hr. | LI<br>CYL.<br>DOFF | 458<br>170<br>10.0 | S. L. 4 ROLL CUSH.<br>ONE PROCESS | 6 | 5.44 | 63 | 206 | 116 |
| X 3 | 9 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. SUP. CLNR. | 4. COND. #11<br>5. LAT. OPR. #12 | 1216 | No. 1<br>No. 2 | 2 BLADE<br>CARDING | 20.2<br>29.9 | 230 lbs. hr.<br>10 oz./yd. | 129.6 DR.<br>41 GR. SL.<br>12.5 lbs. hr. | LI<br>CYL.<br>DOFF | 447<br>168<br>7.24 | S. L. 4 ROLL CUSH.<br>BREAKER<br>FINISHER | 6<br>6 | 3.58<br>6.08 | 55<br>55 | 310<br>310 | 214<br>214 |
| Y 1 | 13 | 1. BL. FDR.<br>2. VERT. OPR.<br>3. HORZ. CLNR. | 4. GYRATOR | 1928 | No. 1<br>No. 2 | 3 BLADE<br>CARDING | 24<br>15 | 345 lbs. hr.<br>14 oz./yd. | 110.4 DR.<br>47 GR. SL.<br>10.4 lbs. hr. | LI<br>CYL.<br>DOFF | 408<br>172<br>7.65 | S. L. 4 ROLL CUSH.<br>BREAKER<br>FINISHER | 6<br>6 | 5.22<br>5.34 | 55<br>54 | 326<br>307 | 200<br>208 |
| Y 2 | 14 | 1. BL. FDR.<br>2. LAT. OPR. #12<br>3. COND. #11 | 4. SUP. CLNR. | 1144 | No. 1<br>No. 2 | 2 BLADE<br>CARDING | 17.6<br>19.5 | 331 lbs. hr.<br>14.5 oz./yd. | 115.3 DR.<br>40 GR. SL.<br>10 lbs. hr. | LI<br>CYL.<br>DOFF | 448<br>165<br>7.6 | S. L. 4 ROLL CUSH.<br>BREAKER<br>FINISHER | 6<br>6 | 6.11<br>6.11 | 54<br>53 | 335<br>335 | 215<br>215 |
| Y 3 | 16 | 1. BL. FDR.<br>2. LAT. OPR. #12<br>3. COND. #11 | 4. VERT. OPR. | 1440 | No. 1<br>No. 2<br>No. 3 | 3 BLADE<br>2 BLADE<br>CARDING | 41.14<br>15.49<br>24.64 | 506 lbs. hr.<br>14.5 oz./yd. | 113 DR.<br>50 GR. SL.<br>9.5 lbs. hr. | LI<br>CYL.<br>DOFF | 450<br>165<br>7.65 | LAP WINDER<br>S. L. CONT. DR. | 16<br>1 | 1<br>16 | 880<br>55 | 365 | 209 |

**For a further tabulation of production data and its relation to*

of ends fed, draft, size of roving delivered by each roving frame, front roll speed, spindle speed, turns per inch, and twist multiplier of the roving. A number of different types of drafting systems were used, the most common being the Saco-Lowell J-3 frame. The figures in parentheses in the first column indicate first or second process of roving, the "W" and "F" show whether warp or filling yarn is being produced.

It will be noticed that some mills run only one roving process and use the same size roving for spinning both warp and filling, while others produce different size rovings for warp and filling, using two roving processes in the manufacture of each. Wide spreads in draft are shown, ranging from 4.20 in Mill No. 8 for both warp and filling to 22.7 in Mill No. 3 for warp, and to 28.58 in Mill No. 13 for filling.

The information on "Spinning" contained in Table 2 shows the type of drafting system used in spinning warp and filling yarn doublings, drafts, size of yarn spun, front roll and spindle speeds, and twist in the yarns. The three principal types of long draft spinning systems are represented, along with a modified Roth system used in Mill No. 5. Warp yarns varied in count over a narrow range from 30s to 32s, while filling yarns showed a spread of from 38s in three mills to 44s in Mill No. 12

In the case of warp yarns, the lowest draft in spinning was 12.4 for Mill No. 7, the highest was 20 for Mill No. 5. Spinning drafts for

## *Table 3. Production Rates in Drawing, Roving, and Spinning*

**AREA 1**

| Cotton Code | Mill No. | Drawing | | Roving | | Spinning |
|---|---|---|---|---|---|---|
| | | Breaker | Finisher | 1st | 2nd | |
| | | | WARP | | | |
| ZZ 1 | 4 | 12.7 | —— | 0.89 | 0.23 | 0.0220 |
| ZZ 2 | 5 | 14.1 | —— | 0.75 | —— | 0.0243 |
| XX 1 | 10 | 15.6 | 16.4 | 0.69 | 0.21 | 0.0237 |
| XX 2 | 11 | 13.5 | 13.3 | 0.29 | —— | 0.0252 |
| XX 3 | 12 | 15.1 | —— | 1.00 | 0.25 | 0.0282 |
| YY 1 | 15 | 13.0 | —— | 0.50 | —— | 0.0270 |
| YY 2 | 17 | 11.8 | —— | 0.63 | —— | 0.0257 |
| YY 3 | 18 | 15.5 | 14.5 | 0.87 | —— | 0.0394 |
| | | | FILLING | | | |
| ZZ 1 | 4 | 12.7 | —— | 0.89 | 0.23 | 0.0170 |
| ZZ 2 | 5 | 14.1 | —— | 0.75 | —— | 0.0189 |
| XX 1 | 10 | 15.6 | 16.4 | 0.48 | 0.13 | 0.0165 |
| XX 2 | 11 | 13.5 | 13.3 | 0.40 | —— | 0.0202 |
| XX 3 | 12 | 15.1 | —— | 0.87 | 0.19 | 0.0182 |
| YY 1 | 15 | 13.0 | —— | 0.35 | —— | 0.0195 |
| YY 2 | 17 | 11.8 | —— | 0.33 | —— | 0.0215 |
| YY 3 | 18 | 15.5 | 14.5 | 0.87 | —— | 0.0412 |

**AREA 2**

| Cotton Code | Mill No. | Drawing | | Roving | | Spinning |
|---|---|---|---|---|---|---|
| | | Breaker | Finisher | 1st | 2nd | |
| | | | WARP | | | |
| Z 1 | 1 | 12.6 | —— | 0.56 | —— | 0.0267 |
| Z 2 | 2 | 18.3 | 16.6 | 0.31 | —— | 0.0280 |
| Z 3 | 3 | 13.8 | 13.4 | 0.25 | —— | 0.0258 |
| X 1 | 7 | 11.5 | 15.0 | 0.38 | —— | 0.0252 |
| X 2 | 8 | 11.4 | —— | 2.17 | 0.73 | 0.0264 |
| X 3 | 9 | 14.1 | 14.1 | 2.00 | 0.52 | 0.0239 |
| Y 1 | 13 | 13.0 | 13.9 | 0.68 | —— | 0.0275 |
| Y 2 | 14 | 13.5 | 13.3 | 0.29 | —— | 0.0252 |
| Y 3 | 16 | 15.3 | —— | 0.23 | —— | 0.0268 |
| | | | FILLING | | | |
| Z 1 | 1 | 12.6 | —— | 0.40 | —— | 0.0186 |
| Z 2 | 2 | 19.2 | 18.0 | 0.54 | —— | 0.0199 |
| Z 3 | 3 | 13.8 | 13.4 | 0.30 | —— | 0.0196 |
| X 1 | 7 | 11.5 | 15.0 | 0.38 | —— | 0.0174 |
| X 2 | 8 | 11.4 | —— | 0.22 | 0.52 | 0.0182 |
| X 3 | 9 | 14.1 | 14.0 | 0.38 | —— | 0.0161 |
| Y 1 | 13 | 13.0 | 13.9 | 0.17 | —— | 0.0200 |
| Y 2 | 14 | 13.5 | 13.3 | 0.40 | —— | 0.0195 |
| Y 3 | 16 | 15.3 | —— | 0.37 | —— | 0.0152 |

## *Participating in the 17-Mill Test*

| ROVING | | | | | | | | | SPINNING | | | | | | | Mill No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Machine | | Dkf. | Dr. | H. R. Dkf. | F. R. | S.P. | T. P. I. | T. M. | Machine | Dkf. | Dr. | Twist | F. R. | S.P. | T. P. I. | T. M. | |
| (1) S. L. (2-1) | W. | 1 | 7.8 | 1.20 | 176 | 880 | 1.46 | 1.55 | S. L. ROTH-W. | 2 | 18.6 | 52 | 123 | 9,500 | 26.5 | 4.50 | 4 |
| (2) S. L. (3 ROLL) | F. | 2 | 5.8 | 2.43 | 113 | 960 | 2.41 | 1.50 | S. L. ROTH-F. | 1 | 11.9 | 41 | 123 | 9,500 | 27.6 | 4.25 | |
| (1) S. L. (4-3) W. & F. | | 1 | 10.2 | 1.69 | 191 | 950 | 1.53 | 1.23 | MOD. ROTH-W.<br>MOD. ROTH-F. | 1<br>1 | 20.0<br>26.2 | 55<br>42 | 123<br>128 | 9,650<br>9,850 | 24.5<br>24.5 | 4.33<br>3.78 | 5 |
| (1) S. L. (2-1) | W. | 1 | 10.1 | 1.41 | 158 | 790 | 1.60 | 1.55 | S. L. ROTH-W. | 2 | 16.0 | 50 | 115 | 8,625 | 24.7 | 4.51 | 10 |
| (2) 3 ROLL | | 2 | 9.4 | 3.75 | 151 | 1180 | 2.85 | 1.46 | S. L. ROTH-F. | 2 | 16.0 | 40 | 106 | 8,125 | 25.6 | 4.06 | |
| (1) S. L. (2-1) | F. | 1 | 12.8 | 1.89 | 124 | 780 | 1.89 | 1.35 | | | | | | | | | |
| (2) 3 ROLL | | 2 | 5.6 | 1.00 | 90 | 1160 | 2.27 | 1.46 | | | | | | | | | |
| (1) S. L. (2-1) W. | | 1 | 20.70 | 3.25 | 154 | 1386 | 2.48 | 1.35 | SHAW & ROTH-W. | 2 | 19.39 | 71.5 | 128 | 9,775 | 24.35 | 4.42 | 11 |
| (1) S. L. (2-1) F. | | 1 | 16.56 | 2.60 | 145 | 1160 | 2.26 | 1.35 | SHAW & ROTH-F. | 1 | 14.61 | 58.9 | 127.2 | 9,458 | 24.33 | 3.86 | |
| (1) S. L. (4) | W. | 1 | 8.6 | 1.39 | 188 | 888 | 1.78 | 1.17 | S. L. ROTH-W. | 2 | 17.4 | 51 | 117 | 10,000 | 22.4 | 4.25 | 12 |
| (2) S. L. (3 ROLL) | | 2 | 5.5 | 2.06 | 159 | 1075 | 2.49 | 1.27 | S. L. ROTH-F. | 2 | 19.3 | 44 | 131 | 9,800 | 23.9 | 3.66 | |
| (1) S. L. (4) | F. | 1 | 9.6 | 1.43 | 190 | 892 | 2.41 | 1.16 | | | | | | | | | |
| (2) S. L. (3 ROLL) | | 2 | 6.1 | 4.80 | 127 | 1096 | 2.80 | 1.24 | | | | | | | | | |
| (1) S. L. (FS-2) W. | | 1 | 11.0 | 2.00 | 142 | 995 | 1.74 | 1.06 | WH. CASABL-W. | 1 | 15.9 | 50 | 140 | 10,250 | 25.0 | 4.56 | 15 |
| (1) S. L. (FS-2) F. | | 1 | 13.6 | 2.80 | 125 | 900 | 2.07 | 1.31 | WH. CASABL-F. | 1 | 16.0 | 40 | 135 | 9,500 | 25.7 | 4.06 | |
| (1) S. L. (FS-2) W. | | 1 | 10.5 | 1.75 | 190 | 1064 | 1.87 | 1.37 | S. L. ROTH-W. | 1 | 16.0 | 51.5 | 162 | 10,000 | 25.0 | 4.30 | 17 |
| (1) S. L. (FS-2) F. | | 1 | 15.6 | 2.66 | 128 | 1039 | 2.58 | 1.48 | S. L. ROTH-F. | 1 | 14.6 | 58 | 134 | 9,629 | 23.7 | 3.75 | |
| (1) WH. INTERDR. W. & F. | | 1 | 8.2 | 1.58 | 178 | 982 | 1.83 | 1.43 | WH. CASABL-W.<br>WH. CASABL-F. | 1<br>1 | 15.8<br>13.8 | 53<br>53 | 151<br>145 | 9,100<br>9,025 | 24.9<br>25.4 | 4.77<br>4.02 | 18 |
| (1) S. L. (2-1) W. | | 1 | 21.0 | 1.90 | 158 | 1000 | 1.85 | 1.34 | S. L. ROTH-W. | 1 | 16.1 | 50.5 | 159 | 10,000 | 24.5 | 4.43 | 1 |
| (1) S. L. (2-1) F. | | 1 | 19.6 | 2.85 | 140 | 1150 | 2.25 | 1.55 | S. L. ROTH-F. | 1 | 16.8 | 40.5 | 159 | 9,500 | 23.9 | 3.83 | |
| (1) S. L. (2-1) W. | | 1 | 21.7 | 2.50 | 151 | 1185 | 2.25 | 1.25 | S. L. ROTH-W. | 2 | 19.4 | 50.8 | 140 | 11,064 | 23.9 | 4.58 | 2 |
| (1) S. L. (2-1) F. | | 1 | 21.4 | 2.68 | 145 | 1040 | 1.17 | 1.10 | S. L. ROTH-F. | 1 | 15.4 | 40.2 | 139 | 9,887 | 24.1 | 3.83 | |
| (1) WH. SUPERDR-W. | | 1 | 23.7 | 3.59 | 128 | 1141 | 2.56 | 1.37 | WH. CASABL.-W. | 2 | 18.4 | 51 | 151 | 10,000 | 23.8 | 4.46 | 3 |
| (1) WH. SUPERDR-F. | | 1 | 20.1 | 3.00 | 108 | 1059 | 2.28 | 1.31 | WH. CASABL.-F. | 1 | 13.9 | 40 | 127 | 9,250 | 24.4 | 3.91 | |
| (1) S. L. (2-1) W. & F. | | 1 | 16.6 | 2.50 | 175 | 1081 | 2.27 | 1.43 | WH. CASABL.-W.<br>WH. CASABL.-F. | 1<br>1 | 17.1<br>16.4 | 51<br>41 | 154<br>138 | 9,800<br>9,500 | 24.9<br>25.8 | 4.46<br>4.02 | 7 |
| (1) S. L. (3 ROLL) W. & F. | | 1 | 4.20 | 0.63 | 204 | 829 | 0.86 | 1.06 | S. L. ROTH-W. | 1 | 19.0 | 50 | 157 | 9,500 | 24.8 | 4.57 | 8 |
| (2) S. L. (3 ROLL) W. | | 2 | 3.78 | 1.58 | 164 | 815 | 1.64 | 1.15 | S. L. ROTH-F. | 1 | 20.2 | 42 | 117 | 9,500 | 26.2 | 4.14 | |
| (2) S. L. (3 ROLL) F. | | 2 | 6.10 | 2.08 | 155 | 960 | 1.75 | 1.32 | | | | | | | | | |
| (1) WH. LONG DR. | W. | 1 | 8.10 | 0.83 | 197 | 956 | 0.94 | 1.04 | WH. CASABL.-W. | 1 | 15.7 | 71.5 | 174 | 9,250 | 24.5 | 4.78 | 9 |
| (2) WH. LONG DR. | | 2 | 6.15 | 2.66 | 152 | 939 | 1.77 | 1.25 | WH. CASABL.-F. | 1 | 17.0 | 47.5 | 151 | 8,500 | 24.6 | 3.77 | |
| (1) S. L. (2-1) F. | | 1 | 16.50 | 2.50 | 129 | 950 | 2.00 | 1.27 | | | | | | | | | |
| (1) S. L. (2-1) W. | | 1 | 19.70 | 1.65 | 165 | 1052 | 1.81 | 1.41 | S. L. ROTH-W. | 1 | 18.2 | 50 | 152 | 10,263 | 24.8 | 4.32 | 13 |
| (1) S. L. (2-1) F. | | 1 | 20.58 | 3.81 | 161 | 1195 | 2.92 | 1.41 | S. L. ROTH-F. | 2 | 18.2 | 40 | 120 | 10,045 | 24.8 | 3.82 | |
| (1) S. L. (2-1) W. | | 1 | 20.70 | 3.25 | 154 | 1160 | 2.43 | 1.35 | SHAW & ROTH-W. | 2 | 19.4 | 71.5 | 128 | 9,775 | 24.4 | 4.42 | 14 |
| (1) S. L. (2-1) F. | | 1 | 16.56 | 2.60 | 145 | 1160 | 2.26 | 1.35 | SHAW & ROTH-F. | 1 | 14.6 | 58.9 | 119 | 9,270 | 24.8 | 4.00 | |
| (1) S. L. (2-1) W. | | 1 | 23.67 | 2.56 | 124 | 1071 | 2.53 | 1.16 | S. L. ROTH-W. | 2 | 17.1 | 50 | 128 | 10,000 | 24.6 | 4.58 | 16 |
| (1) S. L. (2-1) F. | | 1 | 17.31 | 2.64 | 128 | 1024 | 2.08 | 1.39 | S. L. ROTH-F. | 1 | 13.9 | 41 | 118 | 9,900 | 25.0 | 3.97 | |

*nep index and waste, see Appendix Table 2, page 124.*

filling yarns ran from a low of 11.9 in Mill No. 4 to a high of 26.2 in Mill No. 5. The slowest front roll speeds for both warp and filling were found in Mill No. 10, while Mill No. 2 showed the highest speeds in both cases.

Production rates for processing both warp and filling through drawing, roving, and spinning are listed for all mills in Table 3. In the case of drawing, the figures are tabulated in lb/hr/delivery, based on 90% efficiency for the Controlled Draft system and on 80% for the other types. In roving and spinning the production rates are shown in lb/hr/spindle, at 100% efficiency.

The organization followed at the spinning laboratory at Clemson is shown in Table 4. No opening or cleaning equipment was used in the laboratory processing. The test samples of cotton were spread out by hand on the feed apron of a finisher picker and run into a lap. The resulting lap was then doubled and again passed through the picker. Subsequent processing was carried out on conventional equipment as listed in Table 4.

In summing up the various methods of manufacturing in the 17 mills participating in the ginning-spinning test, it is interesting to consider the range of total doublings and drafts involved. For warp yarns, the total doublings vary from 12 in Mill No. 8 to 144 in Mill No. 10, while total drafts show a spread of from 270,587 in Mill No. 8 to 3,389,055 in Mill No. 10. In the case of filling yarn, the lowest total doublings are 12 for Mill No. 8 and the highest are 144 for Mill No. 10. Total drafts in the production of filling yarn range from 379,155 in Mill No. 8 to 4,488,913 in Mill No. 10.

### *Table 4. Organization for USDA Spinning Laboratory**

**Opening Line**
None

**Picking**
Each lot processed through a finisher type picker twice to produce 11 oz lap
Type of beater—carding
RPM of beater—1000

**Carding**
Draft—120.3
Sliver produced—40 gr/yd
Production rate—9.5 lb/hr
RPM Licker-in—435
RPM Cylinder—165
RPM Doffer—10

**Drawing**
Two processes—4-roll cushion type, 6 ends fed
Draft (each process)—5.73
Breaker drawing sliver—41.9 gr/yd
Finisher drawing sliver—43.8 gr/yd
Speed (each process)—108 ft/min

**Roving**
Same for warp and filling
Type of equipment—8x4 2-apron long draft
Roving delivered—3.25 hank
Spindle speed—1250
Draft—17.1

**Spinning**
Type of equipment—long draft (2-apron type)
3.25 hank roving fed double for both warp and filling
Draft (warp)—18.4
Draft (filling)—24.5
Spindle speed (warp and filling)—9000

**Total Doublings**
72—both warp and filling

**Total Draft**
613,485—warp
816,868—filling

* Figures listed are based on information contained in "Summary of Fiber and Spinning Test Results for Cotton Varieties Grown by Selected Cotton Improvement Groups, Crop of 1950." USDA (P.M.A., Cotton Branch), January, 1951.

## II. Relationships Among Yarn Strength, Yarn Uniformity, and Differences in Yarn Manufacturing Processes

### General Considerations

In beginning this discussion, definitions of the terms to be used and an explanation of how the samples were selected for testing will be given.

Yarn strength will be considered in two ways: The first, measure of yarn strength is the standard skein strength. To obtain this, the mills cooperating in the test were requested to select twenty-five spindles on a spinning frame and number them. The five samples of cotton processed by each mill were then spun on these spindles and the twenty-five bobbins of yarn from each cotton sample were submitted to the United States Department of Agriculture, Clemson Cotton Laboratory. This laboratory measured the breaking strength of one skein from each of the twenty-five bobbins. The skein strength was then converted to the nominal cotton count of 30s for warp yarn and 40s for filling yarn using the USDA formula.

The results of all five cotton samples tested were averaged together in the present study, so that each skein strength considered is an average of 125 tests. These data could not be used for comparisons between mills since, as has already been pointed out, each mill processed samples of cotton that differed in some respect from the samples used by the other mills. Some cottons were hand picked, some were machine picked, etc. Undoubtedly these differences in cotton samples could affect the yarn strength.

In order to isolate the effect of processing variables on yarn strength, it was necessary to eliminate the effect of differences in cottons. This was accomplished by (1) averaging for each of the mills the results of yarn strength for the cottons ginned under various conditions, and (2) eliminating the effects of ginning equipment, harvesting methods, and areas of growth through the use of a yarn strength index.

The skein strength of the yarns was measured at the Clemson Laboratory, and these data served as the common denominator in the yarn strength index. *This index is the ratio of the skein strength of yarns manufactured from samples of cotton by each mill divided by the skein strength of yarns manufactured from a portion of the same cotton samples by the Clemson Laboratory. The Clemson Laboratory manufactured yarns from part of the same cottons sent each of the mills, using the same machinery for every cotton sample,* Table 4.

The per cent nonuniformity of the mill manufactured yarns was also measured, using the ITT Uniformity Analyzer. A brief description of the procedure used in determining this yarn property has been prepared by Dr. E. J. Bernet, who is responsible for the development of the ITT Uniformity Analyzer. This description will be found in the Appendix [page 124].

To measure the nonuniformity of the mill manufactured yarns, twenty-four bobbins of each yarn sample were sent by the Clemson Laboratory to the Institute of Textile Technology, where the Textile Testing Laboratory made the determinations. One thousand feet from each of the bobbins was tested and the results averaged. *To study the data, the results from all five samples processed by each mill were averaged so that each per cent nonuniformity figure is an average of fifty determinations.*

### Data and Discussion

It might be well first to point out again that some variables present in the test procedures were not measured and some were intangible and could not be measured. Undoubtedly, these variables affected the test results and, therefore, the correlations among yarn strength, uniformity, and the processing variables measured were not as close as they could have been.

The study was begun with an investigation of the relationship between yarn skein strength and fabric strength. This was selected as the starting point because the strongest yarn should make the strongest fabric. If the test results did not indicate this, the advisability of continuing the analysis of the data was questionable.

*That there is a direct relationship between yarn skein strength and fabric strength is shown in Figures 1A and B with certain exceptions. For instance, Mill No. 5 made a much stronger fabric in the warp direction than the strength of the yarns manufactured by that mill would indicate. Conversely, Mills 3 and 14 made fabrics which were weaker in the warp direction than those which would be predicted from the strengths of the yarns they manufactured.*

In the case of the filling yarns, the same general trend toward stronger yarns from stronger fabrics was apparent, again with exceptions. This indicated that although there were evidently some variables present which had not been given consideration, the expected general relationship had nevertheless been found.

The relationship between yarn strength and uniformity was next considered. Previous work at the Institute on this subject had demonstrated that *the more uniform yarn was also the stronger yarn,* Figure 2. In the present study, the relationship between yarn strength and uniformity was further investigated, and it was again found that *those yarns with the lowest per cent nonuniformity were the stronger,* Figures 3A and B. Again, there are exceptions to this trend.

In Area 1, Mill No. 11, and in Area 2, Mills 3, 8, and 14 made warp yarns that were stronger than would be predicted from per cent nonuniformity values. The same general relationship between strength and uniformity was found to be true for the filling yarns, although the data were more scattered. Perhaps a portion of this scattering was due to variations in the cotton samples. If uniformity data had been available for the yarns spun at the Clemson Laboratory, a uniformity index could have been calculated. A comparison of uniformity index with strength index probably would

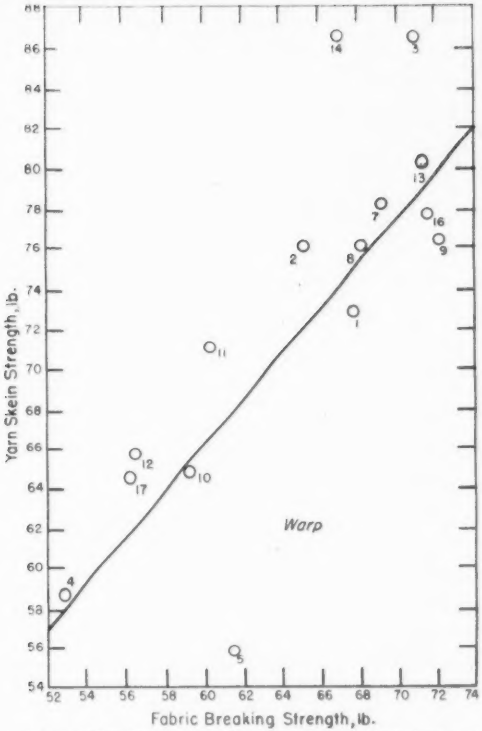



**FIG. 1A.** Breaking strength of warp yarns plotted against breaking strength of fabric in warp direction.

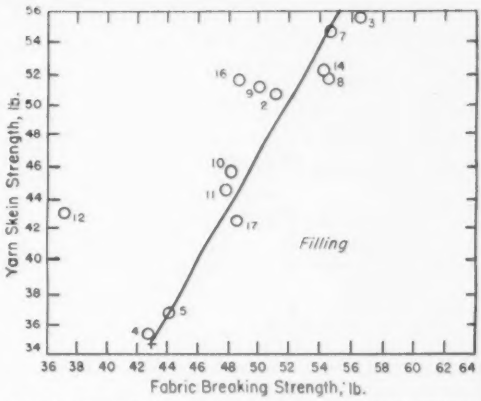



**FIG. 1B.** Breaking strength of filling yarns plotted against breaking strength of fabric in filling direction.

have indicated a much clearer trend.

One of the questions that arises in cotton yarn manufacturing is the distribution of drafting necessary to convert sliver into yarn. Fiori (2), in a study of the effect of draft distribution on yarn strength and appearance, found that increasing the draft in drawing from four to eight times, or in roving, from eight to sixteen times had little effect on the strength or grade of 15s cotton yarn. When the spinning draft was increased, however, the yarn strength was decreased although the yarn grade was unaffected.

In general, this was found to be true in the present test, but no good correlation was found between strength index and the draft in carding or in drawing or roving operations. *The trend, however, is toward increasing the strength index with decreasing spinning draft.* Tables 5A and B.

Another factor considered was the number of doublings necessary to produce cotton yarn of optimum strength and uniformity.

It has been pointed out that short-term variations in yarn size increase with drafting, while long-term variations decrease with doublings (3, 4). A balance between these two opposing factors must accordingly be established in each mill since doublings decrease variations in yarn uniformity, while the necessary accompanying draft increases the variations.

Whether the advantages of doubling are sufficient to overcome the disadvantages of drafting, often depends upon the mill organization used in manufacturing a given yarn (5).

Cox and Ingham (6) proposed the following relationship between doubling and uniformity:

$$CV_2 = \frac{CV_1}{\sqrt{N}}$$

in which

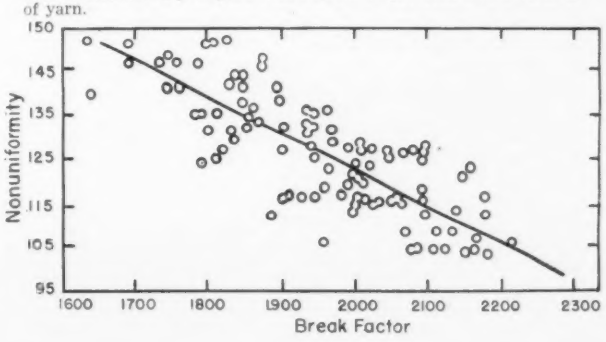
$CV_1$=Coefficient of variation before doubling;

$CV_2$=Coefficient of variation after doubling; and

N=Number of doublings.

The work of Simpson, Landstreet, and Corley (4) substantiated the doubling law of Cox and Ingham. It was also pointed out by Simpson, et al, that yarn with a

**FIG. 2.** Relationship of yarn break factor to per cent nonuniformity of yarn.



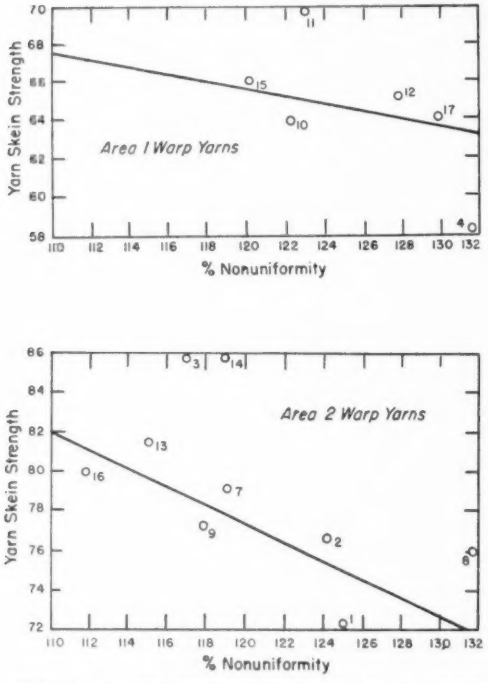



**FIG. 3A.** Breaking strength of warp yarns plotted against per cent nonuniformity.

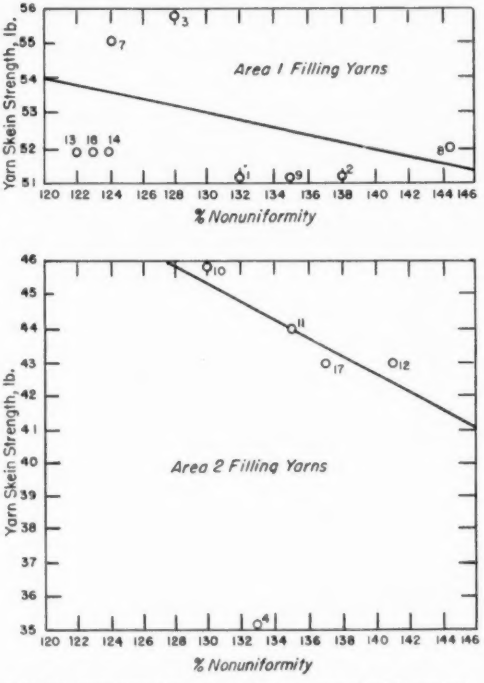



**FIG. 3B.** Breaking strength of filling yarns plotted against per cent nonuniformity.

lower coefficient of variation is stronger.

In the present study, a general trend was found which related an increase in doublings with an increase in strength index, Tables 5A and B.

*It should be pointed out that the data given in Tables 5A and B indicate that spinning draft and total doublings both have an effect on yarn strength index.* Since it was impossible to separate these two variables in the analysis of the data, their effect on strength index must be considered simultaneously.

*For example, the four filling yarns with the highest strength indexes have a comparatively large number of doublings history except the yarn manufactured by Mill No. 11, and this yarn was manufactured with a spinning draft below the average. The four filling yarns with the lowest strength indices all were made with low numbers of doublings, and all but one were drafted more than the average amount in spinning.*

The same trend of increased strength index with lower spinning draft and higher doublings is apparent in the warp yarns, although the correlations are not as good. *No correlation was found between yarn strength index and twist in roving or twist in yarn or spinning spindle speed.*

As previously stated, it was not possible to calculate a uniformity index because no uniformity data was available on yarns manufactured at the Clemson Laboratories. Because of this, it was not possible to find any good correlations between processing variables and yarn uniformity.

The correlations pointed out indicate a few trends relating yarn manufacturing conditions with yarn properties. It is hoped that this report will stimulate further investigations on processing variables, perhaps with the data presented in this report as a basis or that obtained in other experiments. Such studies should ultimately lead to fiber processing conditions that will result in stronger and more uniform yarns.

## III. Relation of Processing Conditions and Neps

Further analyses of data from the 17-Mill Test were directed toward determining if the variations in the nep counts made on card webs, yarns, and fabrics produced at the various mills, could be explained in terms of the differences in processing that existed between the mills. While it would not be expected that any single process-

ing factor would account for some mills having high nep counts and others having low counts, at least an indication of the more important contributing factors might be obtained from the trends observed as well as some indication of the influence of these factors on nep count, i.e., whether changing a factor, such as blows per inch at the picker, resulted in a change in card web nep count.

In addition to the importance of minimizing neps in print cloth, this study was further stimulated by the findings of the National Cotton Council *that nep count in the card web was correlated with the subsequent ends-down during yarn spinning.* A plot of this relationship is shown in Figure 4 for the average of all mills for each ginning condition. If some processing factors could therefore be changed to minimize neps in the card web, not only would a better fabric be obtained but also production costs could be decreased through having less ends-down in spinning.

The neps found in the card web yarn, and fabrics were thus selected as quality criteria, and all of the production data available from the mills were used as possible correlation factors.

### *Measurement of Nep Characteristics*

Since the number of neps present in a product is generally dependent upon the definition of the nep and the number of such imperfections counted, the methods used in this test are included for counting neps in card web, yarn, and fabric. Not all of the methods used are standardized, and other investigators may desire a complete description of these tests in carrying out future experiments to corroborate the results. To avoid variations between counters, the neps in each product reported in this work were counted by the same organization, following the same procedure for each mill.

**FIG. 4.** Correlation of neps in the card web and ends-down in spinning.

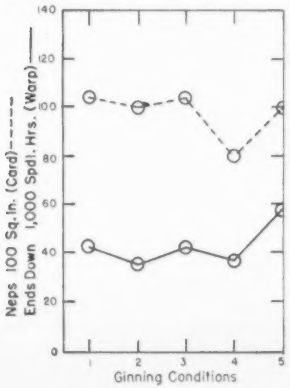



***Table 5A. Relationship Between Strength Index and Spinning Draft and Total Doublings for Filling Yarns***

| Cotton Code | Mill No. | Strength Index | Spinning Draft | Total Doublings |
|---|---|---|---|---|
| XX 1 | 10 | 0.92 | 16.0 | 144 |
| Z 3 | 3 | 0.88 | 13.9 | 64 |
| X 1 | 7 | 0.85 | 16.4 | 96 |
| XX 2 | 11 | 0.85 | 14.6 | 36 |
| YY 2 | 17 | 0.83 | 14.6 | 16 |
| XX 3 | 12 | 0.83 | 19.3 | 64 |
| Z 1 | 1 | 0.83 | 16.9 | 16 |
| Z 2 | 2 | 0.83 | 15.4 | 36 |
| Y 1 | 13 | 0.83 | 18.2 | 72 |
| Y 2 | 14 | 0.83 | 14.6 | 36 |
| Y 3 | 16 | 0.83 | 15.8 | 16 |
| X 2 | 8 | 0.82 | 20.2 | 12 |
| X 3 | 9 | 0.81 | 17.0 | 36 |
| ZZ 1 | 4 | 0.78 | 11.9 | 32 |
| ZZ 2 | 5 | 0.78 | 26.2 | 16 |
| | Av. | 0.83 | 16.7 | 46 |

***Table 5B. Relationship Between Strength Index and Spinning Draft and Total Doublings for Warp Yarns***

| Cotton Code | Mill No. | Strength Index | Spinning Draft | Total Doublings |
|---|---|---|---|---|
| Z 3 | 3 | 0.96 | 18.9 | 128 |
| Y 2 | 14 | 0.96 | 19.0 | 72 |
| XX 2 | 11 | 0.94 | 19.4 | 72 |
| YY 1 | 15 | 0.93 | 15.0 | 16 |
| XX 1 | 10 | 0.90 | 16.0 | 144 |
| Y 1 | 13 | 0.89 | 18.0 | 36 |
| XX 3 | 12 | 0.88 | 17.4 | 64 |
| ZZ 1 | 4 | 0.88 | 18.6 | 64 |
| Y 3 | 16 | 0.87 | 17.0 | 32 |
| YY 2 | 17 | 0.86 | 18.0 | 16 |
| Z 2 | 2 | 0.86 | 19.4 | 72 |
| X 3 | 9 | 0.85 | 15.7 | 72 |
| X 1 | 7 | 0.85 | 12.4 | 96 |
| X 2 | 8 | 0.84 | 19.0 | 12 |
| ZZ 2 | 5 | 0.83 | 20.0 | 144 |
| Z 1 | 1 | 0.82 | 16.1 | 16 |
| | Av. | 0.88 | 17.5 | 66 |

### *Neps in Card Web*

The instructions to the mills were that samples for counts of neps in the card web be taken from laps processed at about the middle of the normal grinding and normal stripping cycles. Each mill selected three such samples from each of the three laps processed for

each ginning condition with the lap running on the card at its:

a) Three-quarter level,
b) One-half level,
c) One-quarter level.

These samples were taken by placing a 9" x 4", velvet-covered plyboard under the center of the web and removing a sample while the card was running. With as little distortion as possible, these boards were covered with a 9" x 4" template containing ten circular holes, each having an area of one square inch and being uniformly distributed over the template area. These boards were then wrapped and mailed to the USDA laboratories at Clemson College for counting.

Values for the neps in the card web were obtained by counting the neps appearing in each hole of the template and averaging the values counted for all of the holes. These values were then converted to "neps per 100 square-inches of card web" for each ginning condition represented by the cotton processed at each mill.

**Table 6. Results of Nep Counts in Card Web for Each Mill (Average of all ginning conditions)**

| Cotton Code | Mill No. | Neps/ 100 in.² (Mill) | Neps/ 100 in.² (USDA) | Nep Index |
|---|---|---|---|---|
| **Area 1** | | | | |
| ZZ 1 | 4 | 53 | 20 | 2.18 |
| ZZ 2 | 5 | 129 | 28 | 3.96 |
| XX 1 | 10 | 86 | 27 | 2.44 |
| XX 2 | 11 | 87 | 51 | 1.25 |
| XX 3 | 12 | 89 | 37 | 1.82 |
| YY 1 | 15 | 45 | 18 | 2.05 |
| YY 2 | 17 | 180 | 21 | 6.61 |
| YY 3 | 18 | 119 | 26 | 3.60 |
| **Area 2** | | | | |
| Z 1 | 1 | 55 | 27 | 1.57 |
| Z 2 | 2 | 116 | 38 | 2.25 |
| Z 3 | 3 | 84 | 38 | 1.63 |
| X 1 | 7 | 75 | 35 | 1.57 |
| X 2 | 8 | 196 | 36 | 4.49 |
| X 3 | 9 | 82 | 36 | 1.80 |
| Y 1 | 13 | 46 | 22 | 1.75 |
| Y 2 | 14 | 69 | 24 | 2.06 |
| Y 3 | 16 | 106 | 23 | 3.31 |
| | | Avg. 95 | 30 | 2.61 |

### *Imperfections in Yarn*

In general, each mill submitted twenty-four bobbins of both warp and filling yarns for each ginning condition to the Institute of Textile Technology for imperfection counts.

The Institute has developed an imperfection counter as an attachment to the 314A Model of the Brush-ITT Uniformity Analyzer. By plugging a special measuring head into the front panel of the Uniformity Analyzer, this instrument is made sensitive to imperfections in yarns which are short compared to the ordinary drafting waves in yarn.

Thus neps, small pieces of trash, and other imperfections not over $\frac{1}{8}$" long give a signal characteristically different from the ordinary thick or thin places (uniformity) of the yarn. An electronic counter is connected to the Uniformity Analyzer in place of the graphic recorder, and this mechanism will count the imperfections passing through the measuring head.

In these tests, yarn was run through the measuring head at 5 feet per second and the counter was read every 30 seconds, corresponding to a total of 50 yards of yarn per reading. Fifty such readings were taken to characterize each ginning condition for each mill, these readings being distributed in groups of ten over five of the bobbins submitted. Only filling yarn was evaluated in these tests. For each sample, a total of 2500 yards was tested, with a grand total of over 300,000 yards evaluated in the entire test.

### *Neps in Fabrics*

Each mill was requested to process its warp and filling yarns into fabric and to submit 120 yards of fabric woven from cottons from each ginning condition for fabric tests. Among the fabric tests made was a count of the neps appearing in the dyed fabrics. The fabrics submitted were dyed at the Monarch and Gaffney laboratories of Deering-Milliken Company, and these dyed fabrics were analyzed for the number of neps present. The count was averaged and expressed for each ginning condition as processed by each mill in terms of "neps per 100 square-inches of fabric."

### *Nep Data*

The data on neps in the card web obtained in these tests by the methods described and counted by the USDA at Clemson are shown for each mill as the average of all five ginning conditions in Table 6. Also included are the data for similar averages on the same cottons but processed by the USDA at Clemson College and counted by that same group. It can be seen from the data that nep counts on mill processed card webs varied from 45 to 196 per 100 square-inches, with this spread occurring in the mills that processed Area 2 cotton as well as those that processed Area 1 cotton.

*There is a trend which indicates that hand picked cotton, Type 1 harvesting method, seemed to have been processed into card webs with lower nep counts.*

The nep counts obtained by the USDA laboratories on the other hand were always much lower than those obtained by the mills

***Table 7. Results of Imperfection Counts on 40s Filling Yarns for Each Mill (Imperfections per 50 yards)***

| Cotton Code | Mill No. | Ginning Conditions 1 | 2 | 3 | 4 | 5 | Avg. | Mill Mix |
|---|---|---|---|---|---|---|---|---|
| **Area 1** | | | | | | | | |
| ZZ 1 | 4 | 71 | 59 | 82 | 66 | 64 | 68 | 74 |
| ZZ 2 | 5 | 99 | 105 | 99 | 108 | 113 | 105 | 125 |
| XX 1 | 10 | 113 | 90 | 109 | 113 | 116 | 108 | 89 |
| XX 2 | 11 | 115 | 140 | 136 | 122 | 119 | 126 | 80 |
| XX 3 | 12 | 153 | 135 | 179 | 118 | 119 | 141 | 80 |
| YY 1 | 15 | * | | | | | | |
| YY 2 | 17 | 173 | 178 | 150 | 157 | 164 | 164 | 91 |
| YY 3 | 18 | ** | | | | | | |
| **Area 2** | | | | | | | | |
| Z 1 | 1 | 75 | 77 | 78 | 83 | 115 | 86 | 122 |
| Z 2 | 2 | 128 | 100 | 136 | 133 | 170 | 133 | 86 |
| Z 3 | 3 | 111 | 83 | 120 | 110 | 136 | 112 | 70 |
| X 1 | 7 | 89 | 74 | 100 | 92 | 94 | 90 | 64 |
| X 2 | 8 | 200 | 193 | 157 | 160 | 219 | 186 | 177 |
| X 3 | 9 | 83 | 105 | 101 | 99 | 69 | 91 | 67 |
| Y 1 | 13 | 101 | 71 | 70 | 80 | 90 | 82 | 94 |
| Y 2 | 14 | 72 | 78 | 81 | 75 | 66 | 74 | 72 |
| Y 3 | 16 | 93 | 100 | 93 | 98 | 87 | 94 | 85 |

* No filling yarn submitted.
** Made heavier yarn counts than other mills.

***Table 8. Results of Imperfection Counts on Filling Yarns for Each Mill (Imperfections per grain of yarn)***

| Cotton Code | Mill No. | Ginning Conditions 1 | 2 | 3 | 4 | 5 | Avg. |
|---|---|---|---|---|---|---|---|
| **Area 1** | | | | | | | |
| ZZ 1 | 4 | 7.0 | 5.8 | 8.1 | 6.5 | 6.3 | 6.7 |
| ZZ 2 | 5 | 10.0 | 10.6 | 10.0 | 10.9 | 11.4 | 10.6 |
| XX 1 | 10 | 10.9 | 8.6 | 10.5 | 10.9 | 10.9 | 10.4 |
| XX 2 | 11 | 10.5 | 12.8 | 12.4 | 11.1 | 10.9 | 11.5 |
| XX 3 | 12 | 16.2 | 14.3 | 18.9 | 12.5 | 12.6 | 14.9 |
| YY 1 | 15 | * | | | | | |
| YY 2 | 17 | 15.8 | 16.2 | 13.7 | 14.3 | 15.0 | 15.0 |
| YY 3 | 18 | ** | | | | | |
| **Area 2** | | | | | | | |
| Z 1 | 1 | 7.3 | 7.5 | 7.6 | 8.1 | 11.2 | 8.4 |
| Z 2 | 2 | 12.4 | 9.7 | 13.1 | 12.8 | 16.4 | 12.8 |
| Z 3 | 3 | 10.7 | 8.0 | 11.5 | 10.6 | 13.1 | 10.8 |
| X 1 | 7 | 8.8 | 7.3 | 9.8 | 9.1 | 9.3 | 8.9 |
| X 2 | 8 | 20.2 | 19.5 | 15.8 | 16.1 | 22.1 | 18.8 |
| X 3 | 9 | 8.5 | 10.7 | 10.3 | 10.1 | 7.0 | 9.3 |
| Y 1 | 13 | 9.7 | 6.8 | 6.7 | 7.7 | 8.6 | 7.9 |
| Y 2 | 14 | 6.6 | 7.1 | 7.4 | 6.8 | 6.0 | 6.8 |
| Y 3 | 16 | 9.2 | 9.8 | 9.2 | 9.6 | 8.6 | 9.3 |

* No filling yarn submitted.
** Made heavier yarn counts than other mills.

and not always of equal magnitude in this difference for a given mill. These lower values would be expected, since the USDA selected samples early in the card stripping and grinding cycles.

Since each mill essentially had a different cotton and no control was present, it is almost impossible to make a valid comparison of the nep quality obtained by any mill with other mills. A comparison of the effects of different processing conditions in these mills on the nep quality of their products is possible, however, if a ratio of the neps obtained by the mill as compared with those obtained by the USDA on the same cottons processed under the same conditions for each cotton is determined and corrections made for differences in the weights of card sliver. Such a calculation was made and a nep index found using the following formula:

$$\text{Nep Index} = \frac{\dfrac{\text{Neps/100 square-inches at mill}}{\text{Card sliver weight at mill}}}{\dfrac{\text{Neps/100 square-inches at USDA}}{\text{Card sliver weight at USDA}}}$$

This nep index is essentially a ratio of the neps-per-grain of card sliver obtained under the two processing conditions. The calculated nep indices obtained for the different mills are also given in Table 6.

Such a nep index makes possible a comparison between mills relative to the influence of processing conditions on neps regardless of ginning types, harvesting conditions, and the area cotton used since the USDA samples were all processed under the same conditions and on the same equipment.

### *Imperfections in Yarn*

The data obtained for filling yarns only are shown in Table 7, for each mill and each ginning condition along with the average of all five ginning conditions for each mill and a sample of the mill's normal mix. Time did not permit similar measurement for the warp yarns, and it was felt that the number of imperfections in the filling yarns was more important in cotton print cloth.

These data varied from 64 imperfections per 50 yards of yarn for the best sample to 200 imperfections per 50 yards of yarn for the poorest sample. The average imperfection count for the mill mix samples of all the mills was about 90 imperfections per 50 yards of yarn.

Since there was some difference in the filling yarn numbers made

***Table 9. Results of Nep Counts in Dyed Fabric (neps per 100 square inches of cloth)***

| Cotton Code | Mill No. | Ginning Conditions 1 | 2 | 3 | 4 | 5 | Avg. |
|---|---|---|---|---|---|---|---|
| **Area 1** | | | | | | | |
| ZZ 1 | 4 | 56 | 70 | 81 | 58 | 85 | 70 |
| ZZ 2 | 5 | 104 | 84 | 108 | 79 | 127 | 100 |
| XX 1 | 10 | 63 | 78 | 71 | 84 | 81 | 73 |
| XX 2 | 11 | 140 | 131 | 127 | 129 | 123 | 130 |
| XX 3 | 12 | 117 | 96 | 89 | 98 | 111 | 102 |
| YY 1 | 15* | | | | | | |
| YY 2 | 17 | 131 | 123 | 125 | 133 | 137 | 130 |
| YY 3 | 18** | | | | | | |
| **Area 2** | | | | | | | |
| Z 1 | 1 | 58 | 102 | 79 | 60 | 106 | 81 |
| Z 2 | 2 | 170 | 104 | 127 | 108 | 131 | 128 |
| Z 3 | 3 | 129 | 135 | 136 | 129 | 138 | 133 |
| X 1 | 7 | 58 | 54 | 54 | 63 | 79 | 62 |
| X 2 | 8 | 131 | 125 | 110 | 136 | 128 | 126 |
| X 3 | 9 | 117 | 119 | 106 | 92 | 110 | 109 |
| Y 1 | 13 | 100 | 100 | 86 | 85 | 113 | 119 |
| Y 2 | 14 | 81 | 96 | 110 | 102 | 123 | 103 |
| Y 3 | 16 | 123 | 113 | 113 | 106 | 127 | 116 |

* No samples submitted.
** Made sheeting rather than print cloth.

by each mill, Table 2, the data shown in Table 7 have been converted to "imperfections per grain" in terms of the average filling yarn number made by each mill. These latter data are shown in Table 8.

Yarns manufactured at the USDA laboratories were not submitted for imperfection counts, and an imperfections-in-yarn index could not therefore be calculated.

### *Neps in Fabrics*

The results obtained by each mill for each ginning condition along with the average of all five ginning conditions for the neps per 100 square-inches of dyed cloth are shown in Table 9. It can be seen from these data that, except for the low average values obtained by Mills 7, 4, 1, and 10, and the high average values obtained by Mills 3, 11, and 8, the remaining mills have approximately the same average values. Data as to weights per square yard of dyed fabric, percentage size in dyed cloth, etc., were not available, however. The yarns made by the USDA laboratories were not processed into cloth and therefore a neps-in-cloth index could not be calculated.

### *Mill Processing Conditions*

Every item available in the data supplied by the mills which might possibly affect the amount of neps in card web was tabulated and listed by mills in ascending order of nep index. Certain of these items are shown in Table 2 of the Appendix. Those items which seemed to best explain the relative position of any mill in this list were separated and are shown in Table 10. Items which might have been related to this study but which either could not be calculated or could not be calculated on a comparable basis for each mill include:

1. Amount and quality of opening, and
2. Total amount of beating in opening.

Those processing factors which appeared to be related to the neps in the card web (index), as summarized in Table 10, are listed for each mill in ascending order of nep index. No one of these factors probably explains any given mill's position in this list, but the trends should prove helpful as a guide in making corrective measures.

As to opening information, the list of equipment submitted by the mills was assumed to be complete. see Table 2. Since many of these items used in the opening lines were condensers, it was decided to include in this analysis also the number of opening machines which contain beating elements. This number is shown for each mill in column 5, Table 10.

For picking, the number of beaters, total blows per inch of these beaters, production, and lap weight have been included. Under carding, the speeds of the licker-in, cylinder and doffer, production, draft, and sliver weight are given.

Data on waste have been included because some mill men feel that certain of the usable fibers removed in carding may be potential nep formers and are therefore fibers which should have been removed. The waste removed at the card expressed as a percentage of the total removed from carding is listed along with the percentage of trash in the sliver and the pounds of fiber per pound of trash removed in opening, picking, and carding.

An analysis of processing conditions after carding was not justified since it was not possible to calculate either a neps-in-yarn index or a neps-in-cloth index. It has been stated by Bogden and Feng (7), however, that the more the drafting or processing in drawing, roving, and spinning, the more will be the amount of neps formed. The relationship between neps in the card web and imperfections in yarn as found in this study will be discussed in more detail later.

### *Discussion and Results*

It has long been recognized that one way to prevent excessive neps in cotton products is to buy cottons which are less susceptible to nep formation. The present study, however, is concerned not with the buying of cotton but rather with determining what mill processing factors are most closely related to excessive nep formation with a given cotton in order that such factors may be modified and a better product made with respect to neppiness.

## *Table 10. Correlation of Processing Factors with Nep-In-Card Web Index*

| | | | OPENING | | PICKING | | | | CARDING | | | | | | WASTE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cotton Code | Mill No. | Nep Index | No. Opening Machines | Beating Element | No. Pick. Beaters | BL IN Picker | Picker Pro. | Lap Wt. | Lick-in Spd. | Cyl. Spd. | Doff Spd. | Card Pro. | Card Drft. | Sliver Wt. | % Waste (Card) | Trash Sliver | Fiber in Tr. Rem'd. |
| XX 2 | 11 | 1.25 | 4 | 2 | 2 | 51 | 368 | 13.5 | 448 | 165 | 7.6 | 10.0 | 107 | 55 | 73 | 0.72 | 1.20 |
| Z 1 | 1 | 1.57 | 2 | 2 | 3 | 52 | 335 | 13.0 | 410 | 170 | 8.0 | 11.0 | 109 | 52 | 80 | —— | —— |
| X 1 | 7 | 1.57 | 4 | 2 | 2 | 78 | 350 | 14.0 | 423 | 172 | 7.4 | 9.8 | 111 | 55 | 71 | 0.52 | 2.36 |
| Z 3 | 3 | 1.63 | 5 | 3 | 3 | 60 | 376 | 14.0 | 461 | 170 | 7.2 | 8.7 | 113 | 54 | 80 | 0.68 | 2.45 |
| Y 1 | 13 | 1.75 | 4 | 3 | 2 | 37 | 385 | 14.0 | 468 | 172 | 7.7 | 7.5 | 130 | 47 | 96 | 0.67 | 3.00 |
| X 3 | 9 | 1.80 | 5 | 3 | 2 | 50 | 250 | 15.0 | 447 | 168 | 7.2 | 8.5 | 129 | 51 | 64 | 0.68 | 1.79 |
| XX 3 | 12 | 1.82 | 4 | 2 | 3 | 70 | 400 | 13.5 | 440 | 165 | 8.0 | 9.5 | 114 | 52 | 68 | 0.72 | 1.55 |
| YY 1 | 15 | 2.05 | 6 | 4 | 3 | 86 | 451 | 14.0 | 502 | 183 | 10.8 | 10.5 | 127 | 48 | 52 | —— | —— |
| Y 2 | 14 | 2.06 | 4 | 2 | 2 | 57 | 337 | 14.5 | 448 | 165 | 7.6 | 10.0 | 115 | 55 | 64 | 0.91 | 1.21 |
| ZZ 1 | 4 | 2.18 | 8 | 4 | 2 | 98 | 332 | 13.0 | 455 | 165 | 6.7 | 8.0 | 115 | 50 | 69 | 0.62 | 3.50 |
| Z 2 | 2 | 2.25 | 6 | 3 | 3 | 63 | 342 | 13.6 | 426 | 156 | 8.0 | 9.0 | 109 | 54 | 58 | 0.49 | 2.45 |
| XX 1 | 10 | 2.44 | 6 | 3 | 3 | 63 | 380 | 14.8 | 462 | 170 | 5.5 | 6.8 | 124 | 52 | 73 | —— | —— |
| Y 3 | 16 | 3.31 | 4 | 2 | 3 | 85 | 356 | 14.5 | 450 | 165 | 7.1 | 8.5 | 115 | 55 | 55 | 0.66 | 0.91 |
| YY 3 | 18 | 3.60 | 5 | 4 | 3 | 92 | 275 | 13.0 | 436 | 164 | 9.5 | 11.0 | 114 | 50 | 56 | 1.10 | 0.94 |
| ZZ 2 | 5 | 3.96 | 4 | 2 | 2 | 41 | 442 | 14.5 | 446 | 167 | 8.3 | 8.5 | 138 | 46 | 72 | 0.80 | 1.89 |
| X 2 | 8 | 4.49 | 5 | 2 | 3 | 86 | 364 | 14.3 | 458 | 170 | 10.0 | 11.8 | 130 | 48 | 63 | 0.72 | 0.93 |
| YY 2 | 17 | 6.61 | 6 | 2 | 2 | 89 | 450 | 15.0 | 425 | 165 | 9.3 | 9.6 | 126 | 52 | 59 | 1.16 | 0.88 |
| | | | Average | | | 68 | 364 | 14.0 | 447 | 168 | 8.0 | 9.3 | 120 | 51 | 68 | 0.75 | 1.79 |

From a recent long-range study on nep formation made at North Carolina State College, Bogden and Feng have concluded that the following mill production factors affect the formation of neps:

(a) Type of opening machinery,
(b) Moving cotton through pipes,
(c) Harsh beating of cotton,
(d) Degree of opening and picking,
(e) Type of beater used,
(f) Licker-in speed,
(g) Doffer speed,
(h) Flats speed,
(i) Stripping cycle,
(j) Grinding cycle,
(k) Flats-to-cylinder settings,
(l) Doffer-to-cylinder settings,
(m) Setting of mote knives,
(n) Angle of mote knives,
(o) Feed plate to licker-in setting,
(p) Cylinder-screen settings,
(q) Weight of lap fed,
(r) Use of roller top cards,
(s) Drafting, r e g a r d l e s s of speeds and settings.

Factors which were found not to affect the formation of neps included:

(a) Speed of card cylinder,
(b) Knife-plate settings,
(c) Card draft,
(d) Type of licker-in wire,
(e) Type of licker-in screen,
(f) Licker-in to cylinder setting,
(g) Speeds and settings in drafting.

### *Neps in Card Web*

Certain trends as to the relationship of processing factors to the amount of neps appearing in the card web can be detected from the information summarized in Table 10. It is apparent that no single factor accounts for a given mill's position in this list and that all factors must be considered together. The listing of mills in ascending order of nep index permits certain conclusions to be drawn according to whether mills of high or low nep index are correlated with high or low values of the processing variables.

Under the number of beating elements, direct correlation appears to exist with nep indices. As to the total number of elements listed in opening, it appears that the mills having the larger numbers are in the lower half and, except for Mill 15, the smaller numbers appear in the upper half. *This line-up bears out the trend that less handling during opening should bring about a lesser tendency for nep formation.*

In picking, all the mills listed used a carding beater in the finisher sections. Those mills having three beaters appear more frequently in the lower half, *suggesting that the less beaters in picking the less neps formed,* Table 10. An excellent trend arises from the list of blows per inch at the picker indicating that *decreased blows generally are followed by decreased neps in the card web.*

No particular significance can be attached to the production rates of the pickers, although there is a tendency for the low production rate values to appear in the upper half of the table. The weight of the picker laps does seem to have a bearing on nep formation, the lighter weight laps appearing more often in the upper half of the list which corresponds to less neps. In a careful study, recently made by one of the Institute member mills, this factor was found to be very important, *and less neps were obtained when lower weight laps were processed.*

From the carding data, it can be seen that variations in licker-in speeds do not explain the variation in neps found in this test, Table 10 The higher cylinder speeds, however, do appear more frequently in the upper half of the list. Almost all of the mills had equal surface-speed ratios for the licker-in to cylinder, and the few exceptions were equally scattered throughout the list.

A good relationship also appears to exist for doffer speeds, *the lower doffer speeds giving the lower nep values.* The values for card production are scattered throughout and appear to give little or no clue as to the cause of differences in neps. As to card draft, the higher card drafts are predominantly in the lower half of the list, indicating a *tendency for lower nep formation at lower card drafts.* This tendency is partially confirmed by the higher weights of card sliver appearing more in the upper half of the list.

The influence of the waste removed can best be seen in the trends suggested by the last three columns of Table 10. Those mills where a higher percentage of total waste was removed by the card

appear more often in the upper half of the list. *Where more waste is left in the sliver, there further appears to be more neps,* since these values are in the lower half of the list. *In general, the more fiber removed per pound of trash in opening, picking, and carding, the greater are the tendencies to reduce neps,* as shown by these values appearing more frequently in the upper half of the list.

The trends suggested from an analysis of these data are that the following processing factors may serve to minimize neps in the card web:

1. *Minimum beating during opening,*
2. *Minimum amount of processing during opening,*
3. *Two rather than three beaters in picking,*
4. *Low production rates on the picker,*
5. *Decreased beating on the picker,*
6. *Lighter weight picker laps,*
7. *Higher cylinder speeds,*
8. *Low doffer speeds,*
9. *Low card draft,*
10. *Heavier weight sliver,*
11. *Removal of largest percentage of total waste at the card,*
12. *Removal of fibers as well as trash,*
13. *Less trash present in card sliver.*

The question may well be asked, "How do these trends hold up for a given mill?" The first three mills listed in Table 10, namely, Mills 11, 1, and 7, conform with these generalizations, whereas the last three mills, Nos. 5, 8, 17, do not. Mills 16 and 18 each have a high number of blows per inch at the picker and are near the bottom of the list.

Mill 15 appears almost in the middle of the list and yet proves to be the exception because it has a large number of beating elements, three picker beaters, high blows per inch, high picker production, high card draft, and light card sliver. The unusually high values for licker-in speed (502 rpm) and cylinder speed (183

## Appendix

### Yarn Uniformity Measurements with the ITT Uniformity Analyzer

By E. J. Bernet

If a piece of yarn is cut into one-half inch lengths and weighed, each successive one-half inch length would be found to weigh a different amount. This variation in weight per unit length of material is termed "nonuniformity" (%NU), and is due to the presence of alternate thick and thin places in all drafted yarns.

The ITT Uniformity Analyzer is an electronic instrument which automatically and rapidly measures the nonuniformity of yarns. The same instrument, with different measuring heads, will also measure the nonuniformity of sliver and roving, and its usefulness has recently been extended to the measurement of the longitudinal inch-by-inch nonuniformity of picker laps.

The ITT Uniformity Analyzer measures weight per unit length of a material by passing that material between the plates of a small electrical condenser. It has been found that the electrical capacity of this small measuring condenser will change according to the amount or weight of material between the plates at any given instant. An electronic circuit transforms this change in electrical capacity into a signal voltage which is automatically graphed on chart paper. Thus the ITT Uniformity Analyzer can measure the uniformity of weight of a material without cutting the material, and in the case of yarn, this measurement can be made at the rate of 5 feet per second.

Once the graph of the nonuniformity of a material has been obtained, a calculation is made from this graph which results in a term called "per cent nonuniformity" (%NU), which is a measurement of the uniformity of that material. The calculation is made by first finding the difference between the thickest and the thinnest parts of the material within each 10 feet of the material. After this difference has been averaged over about 1000 feet of material in the case of yarn, this difference is divided by the mean size of the yarn. The mean size of the yarn is obtained by adding to the average of the thinnest parts, one-half of the difference between the averages of the thickest and thinnest parts. This ratio is then multiplied by 100 to give the per cent.

A yarn with absolutely no variation in weight per unit length would thus have 0% NU. The

### Appendix Table 2. Relation of

| Mill No. | Neps Index | PICKING DATA | | | | | | | | | | | | | | | | | | CARDING DATA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Beater Settings (0.001") | | | | | | | | | Beater Speeds (R. P. M.) | | | | | | | Blows/In. | Feed Plate Exposure | Mote Action | | Lickerin Cylinder | Back Plate to Cylinder | | | | | | |
| | | #1 | | | #2 | | | #3 | | | #1 | | #2 | | #3 | | | | | Top | Bottom | | Top | Bottom | | | | | |
| | | Feed Roll to Beater | Grid to Beater (Top) | Grid to Beater (Bottom) | Feed Roll to Beater | Grid to Beater (Top) | Grid to Beater (Bottom) | Feed Roll to Beater | Grid to Beater (Top) | Grid to Beater (Bottom) | Feed Roll | Beater | Feed Roll | Beater | Feed Roll | Beater | | | | | | | | | | | | | | |
| 11 | 1.25 | 188 | 375 | 625 | — | — | — | 250 | 375 | 625 | 22 | 1281 | — | — | 7 | 1705 | 6140 | 10 | 3 | 10 | 3 | 17 | 22 | | | | | | |
| 1 | 1.87 | 250 | 563 | 625 | 188 | 563 | 625 | 188 | 563 | 625 | 28 | 1600 | 36 | 1206 | 9 | 1206 | 5275 | 10 | 17 | 17 | 10 | 10 | 14 | | | | | | |
| 7 | 1.87 | 250 | 500 | 750 | — | — | — | 250 | 500 | 750 | 13 | 1406 | — | — | 13 | 1406 | 7031 | 10 | 10 | 10 | 3 | 22 | 33 | | | | | | |
| 3 | 1.93 | 250 | 375 | 250 | 250 | 375 | 250 | 188 | 375 | 250 | 7/8" | 956 | 7/8" | 1167 | 16 | 1230 | 6470 | 12 | 15 | 25 | 3 | 23 | 29 | | | | | | |
| 13 | 1.75 | 375 | 688 | 875 | — | — | — | 250 | 375 | 750 | 19 | 1182 | — | — | 9 | 1496 | 7529 | 10 | 3 | 3 | 3 | 28 | 28 | | | | | | |
| 9 | 1.80 | 375 | 750 | 750 | — | — | — | 188 | 750 | 750 | 14 | 1024 | — | — | 9 | 1024 | 5059 | 14 | 10 | 10 | 3 | 22 | 29 | | | | | | |
| 12 | 1.82 | 438 | 688 | 1000 | 375 | 625 | 875 | 218 | 500 | 750 | 7/8" | 956 | 7/8" | 956 | 12 | 923 | 2940 | 10 | 12 | 24 | 3 | 22 | 22 | | | | | | |
| 18 | 2.06 | 250 | 375 | 500 | 125 | 375 | *** | 125 | 375 | *** | 14 | 1172 | 28 | 1140 | 16 | 1172 | 5860 | 10 | 10 | 10 | 3 | 17 | *** | | | | | | |
| 14 | 2.06 | *** | *** | *** | — | — | — | *** | *** | *** | 21 | 1230 | — | — | 8 | 1051 | 2940 | 10 | 10 | 10 | 3 | 17 | 22 | | | | | | |
| 4 | 2.15 | 137 | 688 | 688 | — | — | — | 125 | 563 | 688 | 6 | 500 | — | — | 8 | 1000 | 4000 | 12 | 12 | 12 | 10 | 12 | 17 | | | | | | |
| 2 | 2.25 | 313 | 500 | 1000 | 125 | 500 | 1000 | 218 | 1000 | 1500 | 7 | 900 | 12 | 922 | 7 | 1052 | 2870 | 14 | 10 | 8 | 3 | 12 | 34 | | | | | | |
| 10 | 2.44 | 375 | 1000 | 1000 | 750 | 1000 | 1000 | 250 | 1000 | 1000 | 25 | 940 | 25 | 1000 | 7 | 1190 | 5800 | 12 | 12 | 10 | 3 | 18 | 34 | | | | | | |
| 16 | 3.31 | 500 | 313 | 313 | 313 | 250 | 250 | 313 | 188 | 188 | 9 | 1000 | 16 | 1000 | 9 | 1000 | 5000 | 12 | — | — | — | 16 | 29 | | | | | | |
| 15 | 3.60 | 250 | 1000 | 500 | 250 | 1000 | 500 | 188 | 1000 | 500 | 22 | 1000 | 25 | 1000 | 9 | 1125 | 6094 | 10 | 10 | 8 | 3 | 20 | 32 | | | | | | |
| 5 | 3.95 | 375 | 1000 | 875 | — | — | — | 375 | 1000 | 1000 | 11 | 500 | — | — | 10 | 997 | 5400 | 10 | 15 | 5 | 3 | 29 | 34 | | | | | | |
| 8 | 4.43 | 500 | 250 | 500 | 375 | 250 | 500 | 250 | 250 | 500 | 7 | 900 | 16 | 875 | 8 | 997 | 5400 | 12 | 15 | 10 | 3 | 22 | 29 | | | | | | |
| 17 | 6.61 | 437 | 750 | 500 | — | — | — | 188 | 750 | 500 | 8 | 1200 | — | — | 8 | 1200 | 6420 | 10 | 12 | 10 | 3 | 24 | 29 | | | | | | |

* All mills used wire clothing ** Fast and slow speed rates *** No data submitted

rpm ) may account for this mill's appearing in the upper half rather than the lower half of the list.

It is possible that other factors not shown in Table 10 are more important than some of those given consideration. All other factors which were available have been shown in Table 2 of the Appendix. Only those factors which seemed to best explain the general ranking of the mills according to nep index were separated in Table 10.

greater the %NU, the poorer is the uniformity of the material being measured. Singles cotton yarns have been measured in the range from about 50% NU for the best samples tested up to about 175% NU for the poorest. To give an illustration of what %NU means: For a sample of 36s yarn which tested 100% NU, the thick places in this yarn would, on the average, be the same cotton count as 24s yarn, and the thin places would be the same as 72s count.

The latest model of the ITT Uniformity Analyzer, as manufactured by the Brush Development Company, also includes an Automatic Evaluator, by the use of which the %NU can be read directly from an electrical meter, without the necessity of making or calculating the uniformity graph.

### *Appendix Table 1. Additional Data on Strength and Uniformity of Yarns*

| Cotton Code | Mill No. | Skein Strength (Lbs.) Warp | Skein Strength (Lbs.) Filling | Strength Index* Warp | Strength Index* Filling | % Nonuniformity Warp | % Nonuniformity Filling |
|---|---|---|---|---|---|---|---|
| **Area 1** | | | | | | | |
| ZZ 1 | 4 | 58 | 35 | 0.88 | 0.78 | 132 | 133 |
| ZZ 2 | 5 | 56 | 37 | 0.83 | 0.78 | —— | —— |
| XX 1 | 10 | 64 | 46 | 0.90 | 0.92 | 122 | 130 |
| XX 2 | 11 | 70 | 44 | 0.94 | 0.85 | 123 | 135 |
| XX 3 | 12 | 65 | 43 | 0.88 | 0.83 | 128 | 141 |
| YY 1 | 15 | 66 | — | 0.93 | —— | 120 | —— |
| YY 2 | 17 | 64 | 43 | 0.86 | 0.85 | 130 | 137 |
| **Area 2** | | | | | | | |
| Z 1 | 1 | 72 | 51 | 0.82 | 0.83 | 125 | 132 |
| Z 2 | 2 | 76 | 51 | 0.86 | 0.83 | 124 | 138 |
| Z 3 | 3 | 86 | 56 | 0.96 | 0.88 | 117 | 128 |
| X 1 | 7 | 78 | 55 | 0.85 | 0.85 | 119 | 124 |
| X 2 | 8 | 76 | 52 | 0.84 | 0.82 | 132 | 145 |
| X 3 | 9 | 76 | 51 | 0.85 | 0.81 | 118 | 135 |
| Y 1 | 13 | 80 | 52 | 0.89 | 0.83 | 115 | 122 |
| Y 2 | 14 | 86 | 52 | 0.96 | 0.83 | 119 | 124 |
| Y 3 | 16 | 78 | 52 | 0.87 | 0.83 | 112 | 123 |

* See page 116 for explanation of Strength Index.

### *Imperfections in Yarn*

Since it was not possible to calculate an imperfections-in-yarn index, neither could comparisons be made between mills nor could the variations obtained be explained in terms of variations in processing factors from drawing through spinning. The imperfections in yarn do appear to follow the trends suggested from the neps-in-card-web data, except in the cases of Mills 5 and 16, which seem to have improved their relative positions and Mill No. 12 appears to have made a poorer yarn than would have been suspected, Table 11.

The neps in the card web were converted to "neps per grain" and correlated for each mill and each ginning condition with the corresponding imperfections per grain of the yarn. A plot of these values is shown in Figure 5. A correlation coefficient of 0.74, a highly significant value for 75 samples, was obtained, suggesting that the level of neppiness appearing at the card web is indicative of what can be expected in the yarn.

### *Neps in Fabrics*

A summary of the average values obtained by each mill for neps in card web, imperfections in yarn, and neps in fabric is shown in Table 11, where such comparisons can be made. Those mills having high nep counts at the card web in general had high imperfection counts in the yarn, and the same trend between imperfection counts of yarn and nep counts in the fab-

### *Nep Index to Processing Data*

| CARDING DATA* | | | | | | | | | | | | | | | | | WASTE DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | Mill Waste | | | Shirley Analysis | | | |
| Flats to Cylinder | | | Doffer to Cylinder | Doffer Comb to Doffer | Licker-in to Screen | | Cylinder to Screen | | Front Plate to Cylinder | | Grinding Cycle Acc. | Hours Since Grinding | Stripping Cycle Acc. | Hours Since Stripping | Feed Continuous Dropper | Ratio Licker-in to Cylinder Speeds | Waste through Picker | Waste at Card | Total Waste through Card | Trash in Sliver (Test) | Trash in Picker Lap | Trash in Card Sliver | Mill No. |
| Back | Center | Front | | | Front | Back | Back | Center | Front | Top | Bottom | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | % | % | % | % | % | % | |
| 9 | 9 | 9 | 7 | 22 | 14 | 14 | 17 | 14 | 155 | 29 | 34 | *** | 6 | 2.9 | *** | | 2.72 | 2.76 | 7.42 | 10.18 | 5.76 | 3.05 | 0.72 | 11 |
| 10 | 10 | 10 | 7 | 22 | 10 | 14 | 17 | 12 | 14 | 22 | 27 | 225 | *** | 2.4 | *** | √ | 3.41 | 1.34 | 5.31 | 6.65 | 3.43 | 1.69 | *** | 1 |
| 10 | 9 | 9 | 7 | 17 | 22 | 22 | 14 | 14 | 150 | 27 | 27 | *** | 195 | 2.7 | [illegible] | | 3.45 | 3.92 | 7.44 | 10.46 | 3.67 | 2.06 | 0.52 | 7 |
| 10 | 10 | 10 | 7 | 22 | 155 | 22 | 17 | 14 | 155 | 20 | 34 | 264 | 192 | 2.7 | *** | | 2.71 | 1.74 | 6.92 | 8.66 | 3.13 | 2.10 | 0.56 | 3 |
| 9 | 9 | 9 | 7 | 22 | 22 | 22 | 22 | 14 | 155 | 19 | 22 | *** | 144 | 4.0 | *** | | 2.73 | 0.28 | 6.15 | 6.43 | 2.24 | 1.64 | 0.67 | 15 |
| 10 | 10 | 10 | 7 | 17 | 12 | 14 | 17 | 14 | 155 | 34 | 34 | *** | 120 | 2.7 | 1.05 | √ | 2.66 | 3.45 | 6.10 | 9.55 | 4.05 | 2.64 | 0.66 | 9 |
| 9 | 9 | 9 | 7 | 22 | 12 | 120 | 22 | 14 | 155 | 27 | 22 | *** | 36 | 3.0 | *** | | 2.67 | 6.13 | 8.97 | 15.10 | 5.75 | 3.05 | 0.72 | 12 |
| 10 | *** | *** | 7 | 17 | 167 | 17 | 17 | 14 | 155 | 17 | *** | 240 | *** | 2.5 | *** | √ | 2.74 | 6.95 | 7.55 | 14.50 | 3.59 | *** | *** | 13 |
| 9 | 9 | 9 | 7 | 22 | 14 | 14 | 17 | 14 | 155 | 29 | 34 | *** | 6 | 2.9 | *** | | 2.72 | 4.02 | 7.23 | 11.25 | 4.90 | 3.35 | 0.91 | 14 |
| 10 | 10 | 10 | 7 | 14 | 88 | 36 | 17 | 14 | 155 | 34 | 22 | 216 | *** | 5.0 | *** | √ | 2.76 | 3.54 | 5.70 | 9.24 | 2.40 | 1.56 | 0.62 | 4 |
| 10 | 10 | 10 | 7 | 22 | 17 | 14 | 17 | 125 | 155 | 34 | 34 | 288 | *** | 2.7 | *** | √ | 2.70 | 4.22 | 5.84 | 9.66 | 3.50 | 2.10 | 0.49 | 2 |
| 9 | 9 | 9 | 7 | 22 | 125 | 14 | 22 | 14 | 155 | 34 | 34 | *** | 160 | 4.0 | *** | √ | 2.74 | 2.38 | 5.26 | 8.29 | 2.68 | 1.56 | *** | 10 |
| 11 | 10 | 10 | 7 | 22 | 61 | 29 | 22 | 14 | 155 | 29 | 34 | 240 | 120 | 2.5 | 2.5 | | 2.79 | 5.04 | 6.05 | 11.09 | 5.39 | 3.52 | 0.68 | 16 |
| 10 | 10 | 10 | 7 | 17 | 29 | 155 | 29 | 14 | 155 | 29 | 29 | *** | 26 | 3.0 | *** | | 2.98 | 7.16 | 9.24 | 16.40 | 5.37 | 4.60 | 1.16 | 15 |
| 7 | 7 | 7 | 7 | 22 | 61 | 29 | 29 | 29 | 155 | [illegible] | 22 | *** | 6 | 86.9 | *** | | 2.67 | 2.39 | 6.05 | 8.47 | 3.66 | 2.44 | 0.80 | 5 |
| 10 | 10 | 10 | 7 | 17 | 17 | 155 | 17 | 14 | 155 | 29 | 22 | 288 | 144 | 3.0 | *** | | 2.69 | 3.61 | 6.10 | 9.71 | 3.95 | 2.78 | 0.72 | 8 |
| 10 | 9 | 10 | 7 | 22 | 22 | 22 | 29 | 22 | 155 | 22 | 29 | 240 | *** | 5.0 | *** | √ | 2.68 | 3.46 | 6.07 | 13.75 | 5.18 | 4.52 | 1.16 | 17 |

**Table 11. Summary of Average Nep Quality**

| Cotton Code | Mill No. | Neps/100 Sq. In. Card Web | Imperfections per 50 Yds. of Yarn | Neps per 100 Sq. In. of Dyed Cloth |
|---|---|---|---|---|
| **Area 1** | | | | |
| ZZ 1 | 4 | 53 | 68 | 70 |
| ZZ 2 | 5 | 129 | 105 | 100 |
| XX 1 | 10 | 86 | 108 | 73 |
| XX 2 | 11 | 87 | 126 | 130 |
| XX 3 | 12 | 89 | 141 | 102 |
| YY 1 | 15 | 45 | * | * |
| YY 2 | 17 | 180 | 164 | 130 |
| YY 3 | 18 | 119 | ** | ** |
| **Area 2** | | | | |
| Z 1 | 1 | 55 | 86 | 81 |
| Z 2 | 2 | 116 | 133 | 128 |
| Z 3 | 3 | 84 | 112 | 133 |
| X 1 | 7 | 75 | 90 | 62 |
| X 2 | 8 | 196 | 186 | 126 |
| X 3 | 9 | 82 | 91 | 109 |
| Y 1 | 13 | 46 | 82 | 119 |
| Y 2 | 14 | 69 | 74 | 103 |
| Y 3 | 16 | 106 | 94 | 116 |
| | | Avg. 95 | | |

* No filling yarn or fabric submitted.
** Made heavier yarn counts than other mills.

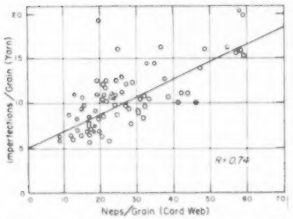



**FIG. 5.** Correlation of neps in card web and imperfections in yarn.

ric appears to exist. Some of the mills with low nep counts in the card web and low imperfection counts in the yarn have low nep counts in the fabric, (Mills 4, 1, and 7), but Mills 10 and 12 have lower values than would be anticipated from the yarn data and Mills 13 and 14 have much higher values.

### *Conclusions:*

The trends observed from analysis of the data available from a study of the 17-Mill Test data as to the relation of processing conditions and the neppiness of card webs, yarns, and fabrics are:

1. *Minimizing neps in the card web is associated with:*

(*a*) *Minimum amount of processing during opening,*

(*b*) *Minimum beating during opening and picking,*

(*c*) *Light weight picker laps,*

(*d*) *Low doffer speeds on the card,*

(*e*) *Low card drafts,*

(*f*) *Heavy weight card sliver,*

(*g*) *Removal of more trash at the card,*

(*h*) *Removal of fibers as well as trash,*

(*i*) *Less trash present in card sliver.*

2. *The presence of neps in the card web in general reflects the number of imperfections which will be found in the yarn subsequently made from the card sliver.*

3. *The presence of neps in the card web and imperfections in the yarn may be reflected in the neps appearing in the fabric, although some outstanding deviations from this conclusion were observed in the data.*


### ACKNOWLEDGEMENTS

It is a pleasure to make the following acknowledgements to those who contributed to the information found in this report:

1. National Cotton Council of America and the American Cotton Manufacturers Institute, who sponsored the original test and permitted the Institute of Textile Technology access to the bulk of the information used.

2. John Wigington, of the American Cotton Manufacturers Institute, who cooperated in assembling the data from the original test.

3. Each of the cooperating mills, which supplied supplementary information and wholesome advice to the Institute staff and participated in the 17-Mill Conference held at the Institute on April 30, 1952.

4. Board of Trustees, Technical Advisory Committee, and Special Committee from the Technical Advisory Committee, of the Institute, composed of M. Earl Heard, T. C. Drew, and Walter Regnery, who advised and assisted in the isolation and interpretation of pertinent data and correlation with processing conditions.

5. Members of the Institute staff, and in particular, Dr. E. J. Bernet for measurements of yarn imperfections and descriptions of these measurements plus that on yarn uniformity; H. A. Mereness for the measurements of yarn uniformities; T. L. W. Bailey, Jr., for general assistance in the compilation, interpretation, and presentation of the data; and John Bevilacqua for the preparation of all graphs and tables appearing in the report as well as those used during the oral presentation on April 30, 1952, at the Institute.

6. Graduate students of the Institute, who assisted in attempting countless correlations between product quality and mill processing conditions.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**FOR REPRINTS** of this article, write to Editor, "Textile Industries," 806 Peachtree St., N. E., Atlanta 5, Georgia.

# Tar Spots and Covered Bales

- ***Further testing planned to find source of tar spots.***
- ***Covered bale tests revealed.***
- ***Aluminum bale tie.***

**IF YOU RECEIVE A BALE OF COTTON COVERED LIKE THIS**—with a laminated jute burlap-paper cover (and you are not a member of the Institute of Textile Technology or the National Cotton Council Test Program)—the Council would appreciate a statement from you as to the condition of the bale and covering when received at the mill, along with any comment as to advantage or disadvantage of this type of bale covering.

*Staff Report*

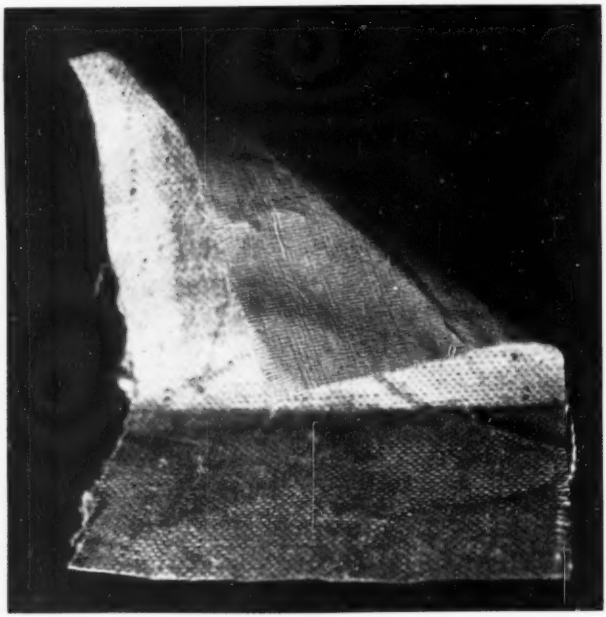
TECHNICAL representatives of eight major mills and mill groups in the Carolinas met in Greenville, August 27, with representatives of the National Cotton Council, the American Cotton Manufacturers Institute, and the Institute of Textile Technology. George Buck, technical director, National Cotton Council, called the meeting to discuss the results of the 1951 Tar Spots Testing Program, and to make plans for continuing tests to determine the source of the spots and means which may reduce or eliminate them from raw cotton and finished goods.

The 1951 tests (TEXTILE INDUSTRIES, March, 1952) were covered in a paper presented by Dent Mangum, of the National Cotton Council, at the Cotton Research Clinic, held at Pinehurst, N. C., in February. These tests indicated, on a basis of spots per unit area, a preponderance of tar on the outside of bales.

There was considerable discussion about the conclusions of the 1951 tar spot testing program. Most mills expressed agreement with the findings—that a large percentage of the contamination is incurred during shipment of baled cotton. However, the experience of some mills indicated an additional type of contamination which makes necessary further study of the problem.

**Shirley Analyzer Tests.** George Buck said the Cotton Council had recognized the validity of the criticism and had instigated a series of tests now being conducted by several mills to determine the tar, by weight, on the

**THE FOUR TEST BALES** received at Joanna Cotton Mill. Note that two of the bales are completely covered, and two are open on two sides. Conventionally covered bale may be seen in right background.



**SAMPLE OF LAMINATED** burlap-paper bale cover.

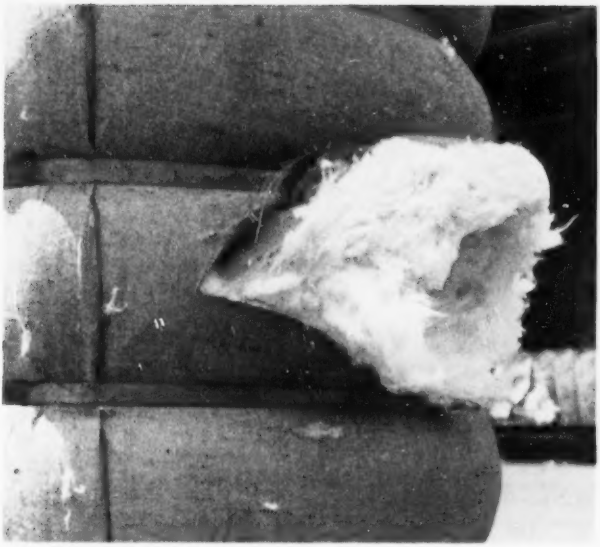
outside of a bale as opposed to the amount on the inside. These tests make use of the Shirley Analyzer, the procedure at one mill being to test a 100-gram sample from the outside and a 100-gram sample from the inside, first giving each sample a solvent test, then running each through the Analyzer, and then testing both the cleaned cotton and the waste for tar.

For example, on one bale tested, the original outside sample showed 28 tar spots in the raw cotton, one spot in the same sample cleaned, and 19 spots in the Analyzer trash. An inside bale sample from the same bale showed no tar spots in the raw cotton, none in the cleaned state, and none in the trash. This bears out on a weight basis, the results of the 1951 surface tests, indicating that by far the greater number of tar spots come from the surface of the bale.

Another mill testing with the Shirley has found some spots on samples taken from inside the bale, but again, far more were found in samples taken from the bale surface.

Still another mill is trying to set up standard test techniques, using the Shirley Analyzer, which will make it possible to extract the tar from samples and express results in terms of percentage of tar by weight for any sample.

The group at this meeting indicated that they thought the weight tests would prove to be of real value, but they also favored a series of tests to determine the reduction in tar spots in finished goods which might result from the use of an adequate protective covering for bales from gin to mill warehouse.



**BALES ARE CUT TO TAKE SAMPLES,** but it is hoped that this will not seriously decrease the protective value of the cover.

**Laminated Burlap-Paper Cover.** T. W. L. Bailey, of the Institute of Textile Technology, reported on the test being conducted by several of their member mills to determine the value of a new type of bale wrapping (see box). Several of the non-member mill representatives expressed interest in the tests and offered to assist by purchasing unbaled cotton from the new crop and having alternate bales wrapped in the new laminated cover and in conventional bagging. The Cotton Council agreed to assist them by providing a man to instruct the gins in proper wrapping methods. Results of all the mill tests will be available to the industry in general.

**Wild Samples.** It was suggested that the Cotton Council arrange with one or more of the large raw cotton warehousing firms to have some of its bales wrapped in the new laminated burlap-paper covers, and have these bales handled in the usual way, with no controls of any kind over their handling or destination. If this program is carried through, the Cotton Council would appreciate a report on bale condition from any mill receiving one or more of these wild sample bales.

Not many mills will be equipped to give a full report on the number of tar spots, but all should be able to report on the condition of the covering and any advantages or disadvantages observed for this method of wrapping.

Some of the wild sample bales may be completely covered; others may have two sides open, as when wrapped with conventional burlap. This wrapping method is, however, simply part of a test program, and is not necessarily any indication of the type of wrapping the industry will eventually adopt.

**Aluminum Straps.** Mr. Bailey said that a large aluminum manufacturer had requested permission to test aluminum bands on some of the bales the ITT member mills were having wrapped in the new cover. Aluminum bands, it was pointed out, had been tested several years ago by the National Cotton Council and had been found too expensive and lacking in flexibility. The manufacturer now thinks these objections have been overcome. Such ties may or may not be used in connection with the ITT testing of the laminated wrapping, depending on whether

### *ITT Bale Covering Tests*

THE INSTITUTE of Textile Technology, Charlottesville, Virginia, has begun a test, with five of its member mills, to determine the value of a new type of laminated paper-burlap covering material for baled cotton. The new laminate was developed at the instigation of Walter Regnery, Joanna (S. C.) Cotton Mill, and it is now being manufactured, in three weights, for commercial sale by Fulton Bag & Cotton Mills, Atlanta, Ga.

The bale covering material is made of a rather closely woven jute burlap, backed with a heavy, semi-waterproof paper. The two materials are bonded with a clear latex adhesive. It sells for little more than new burlap bagging, and since its resale value is higher, total wrapping cost per bale is probably less than with conventional materials. Tare weight is about the same.

The cooperating testing mills will buy cotton from gins of their choosing, instructing the gins to cover alternate bales with the new material. Some of the bales will be completely covered, while others will have two sides open, in the conventional manner. When the bales are received at the mills, the condition of the coverings will be examined, and the cotton will be tagged in process for further testing of finished materials.

Joanna Cotton Mill has already received four bales covered with the laminate. Two of them were completely covered and two were open on two sides. No processing tests have been made, but the bales were received in good condition, and it was noted that very little cotton sticks to the covering when it is stripped from the bale.

The cooperating gins have been furnished the covering material, and gin operators say they have no objections to it from their point of view.

## First Sanforized Terry Cloth Announced by Mooresville

Production of the first successful Sanforized terry cloth, stabilized to shrink less than one per cent in washing, has been achieved by Mooresville Mills, according to Hugh Brown, manager, Terry Products Division.

The method of controlling shrinkage of terry cloth was developed by the mill jointly with Cluett, Peabody & Company, Inc.

The fabrics are designed primarily for apparel manufacturers for use in practically every type of terry garment. Colors available are white and a range of pastel shades, with excellent color fastness. Fabric width is 36 inches and weight is 1.71 yards per pound.

The stabilized fabric is the only cloth of its type in terry, Mr. Brown said. It carries the Sanforized label and can be washed without affecting the traditional high pile or soft hand of terry. The new method does not cause the fabric to mat down and the hand is not harshened. It leaves a lofty pile and a pleasant softness.

"An additional advantage of the method is a tightening of the weave, with a resultant higher thread count per inch," Mr. Brown stated. "This makes a higher-quality, stronger fabric, with increased wear life."

Terry cloth's water absorbent properties are unaffected.

## Seminars for Woolen and Worsted Overseers

Again this year the National Association of Wool Manufacturers is conducting a series of seminars for woolen and worsted overseers. The first was held in Chicago on September 12-13. Others are scheduled as follows with the second set of dates for duplicate seminars if there is sufficient registration: Worcester, Mass., Oct. 14-16, (Oct. 21-23); Philadelphia, Pa., Nov., 10-11, (Nov. 13-14); Chattanooga, Tenn., Dec., 1-2, (Dec. 4-5); Atlanta, Ga., Dec. 8-9, (Dec. 11-12).

The program for the first day will include: (1) Review duties and responsibilities of overseers; (2) develop the subject of common complaints of overseers; (3) up-to-date economic facts of the woolen-worsted industry; (4) labor relations: (a) between overseer and employee and (b) between overseer and department steward or other department spokesmen for employees.

The program for the second day will include: (1) Job analysis: (a) why it should be done and who should do it; (b) uses of job analysis; (2) presentation of typical analysis showing technique used and final results; (3) development of job analyses for specific operations by seminar groups; (4) seminar review of these job analyses.

Richard C. Oberdahn, National Association of Wool Manufacturers industrial relations advisor, is in charge of the seminars. Last year 96 member mills sent 654 persons to the seminars and more mills and overseers are expected to take part this year.

it is thought this new factor might confuse the tests.

**Pre-Gin Spot Sources.** Although the ITT tests and the cooperative efforts of non-member mills, under Cotton Council guidance, are aimed at elimination of excessive tar from the outside of the bale, the group recognizes the probability that there will still be something of a tar spot problem even in cotton completely protected from gin to mill. Even though tarred ties are now no longer used, tarred pick sacks are still common in some cotton growing areas. Also, tar can get into cotton in its trip from the field to the gin, and there is the possibility of tar from used bagging.

All of these sources must be considered before all tar is eliminated from baled cotton. However, it is expected that good bale protection between gin and mill will do much to reduce tar trouble, and it is from this standpoint the problem is to be attacked at this time.

**Cleaning Exteriors.** Currently, many mills are making it a practice to clean the exterior of bales to remove cotton which might be heavy with tar. Common practice seems to be to have warehouse employees pick the outside of the bale, removing dirty cotton. One mill, with a representative at the meeting, is blowing-off the bales rather than picking them, and much better results are reported. The employee uses an air hose to clean the outside of each bale after all but two of the ties have been removed. An average of about two pounds of cotton is removed in the blowing process.

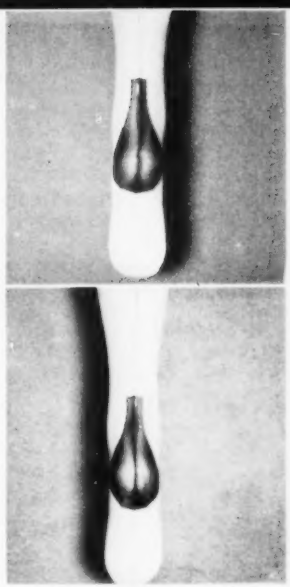
**Cloth Treating.** It is possible, the group agreed, that tar spots, in some degree, will be with us for some time to come. What, then, can be done about tar spots already in the woven cloth? Various types of pretreatment (before bleaching or dyeing) are being tried.

The treatments amount to dry cleaning, and with such treatment, tar can be removed. However, it costs about 1½ cents a yard to treat the cloth, and the equipment used to recover the solvents is expensive. One mill reported it has found it cheaper to spot the material by hand, using an operator on each side of an inspection frame, to remove spots one by one with a solvent.

Spots show up most clearly on corduroy, broadcloth, and similar materials dyed in pastel shades.

One mill research man stated that some finishers are able to remove tar much better than others. Identical grey cloth can be sent to two finishers and finished goods from one will show fewer spots than goods from the other.

**EFFICIENT SEAMER** sees uneven selvages in time to allow slight pulling of short side to match heel without fabric distortion. If seamer sees uneven selvages too late, excessive pulling is necessary to match heel.



**MATCHED SEAMS** (bottom) are produced only by careful operators. Top, high production sometimes means more irregulars.

***When hosiery heels do not match,***

# Are Seamers Always at Fault?

***Part 2* of an article dealing with the problem of uneven selvages in full-fashioned hosiery production.***

EXCLUSIVE

**By JOHN GIFT**

UPON receiving rejects to be ripped and reseamed because of uneven heel seams, some full-fashioned hosiery seamers are inclined to say " . . . these selvages are uneven in length." Many of the hosiery rejects are eventually classed as irregulars. The total number of rejects returned to seamers is controlled by three factors: (1) the quality of the hosiery blanks produced by the knitting department; (2) the overall efficiency of the seamers; and (3) the examining standards established by management.

**Efficiency.** A seamer's efficiency should not be judged solely on high production. Efficiency should be based on the highest production consistent with quality. Seaming is usually a piece rate operation, and the seamers try to produce as many dozens as possible—sometimes sacrificing quality for high production.

Quality control supervisors realize that some uneven selvage lengths are likely to exist as a result of knitting machine repairs, style changes, and sometimes indifference in the knitting department. The seamers also know that some selvage lengths are unreasonably uneven, and some seamers use this fact to justify their inability to match heels and narrowings. A high percentage of

*Part 1 appeared in TI for August, 1952 pages 124 and 125.

neel-match irregulars reduces the yield of first quality hosiery needed to supply a buyers market, currently demanding higher standards of perfection, and management is faced with the task of reconciling the differences.

**Testing.** The use of selvage length testing equipment provides means whereby seamers may be easily rated according to ability. The selvage lengths of a test set of hosiery blanks should be measured and recorded. After seaming, the examiner should record the findings regarding heel matches. An analysis can be made of the two records to determine how well the seamer matches heels which are knitted longer on the right side of the blanks, and how well she matches heels which are knitted longer on the left side.

After the work of several different seamers has been tested, the results may indicate that some seamers are proficient in matching when the right selvage is longer, and less efficient when the left selvage is longer. The opposite may be found regarding other seamers. Another group of seamers may be noted whose matches are perfect, regardless of which selvage (right or left) is longer, provided the difference lies within reasonable tolerances. This latter group of seamers is the most efficient, despite the fact that they may not be the highest producers.

# Keep Those Compressed Air Lines

MAXIMUM benefits are being obtained in plants where close vigilance is kept over the compressed air systems. Conversely, where reasonable maintenance is not conducted, a loss in production and dollars is experienced.

One of the greatest production robbers is low pressure.

It has been found that if the pressure at a pneumatic tool falls from 90 psig. to 70 psig., production output of that tool may drop as much as 35 per cent. Somewhat more specific is the case of the air motors which offer more horsepower per unit weight than other comparable power sources. Because compressed air systems in most plants utilize pressures between 90 and 110 psig., air motors are designed to operate within those working pressures. An air motor, built to operate at 90 psig., however, will lose 25 per cent of its capacity if line losses in delivering air drop the pressure to 70 psig.

First inclination when air pressures drop may be to place the blame on insufficient compressor capacity. A check of the air distribution system, first, may save the cost of new compressor equipment.

One of the principal causes of low air pressure is leaks in the distribution system.

Checking the air distribution system for leaks is a relatively

Based on information supplied by the Compressed Air and Gas Institute

## $2000 Textile Scholarships for High School Graduates

$30,000 to $40,000 in four-year scholarships worth $2000 each will be shared out by New England Textile Foundation among twenty-five high school graduates wishing to take textile courses at any of four New England textile colleges.

Scholarship winners have free choice among the four New England textile colleges participating. These are Bradford Durfee Technical Institute, Fall River, Mass.; Lowell Textile Institute, Lowell, Mass.; New Bedford Textile Institute, New Bedford, Mass.; and the Textile School of Rhode Island School of Design, Providence, R. I.

Provided satisfactory grades are maintained in their college work, students being educated under N.E.T.F. scholarships receive their $2000 awards in eight installments at the rate of $500 per year. On graduation, no restrictions are imposed as to where the student may seek employment, or what type of employment he may accept.

Any American high school graduate is eligible to apply. Awards are made on the basis of the applicant's high school record, and his rank in the standard aptitude test given by the College Entrance Examination Board. Aptitude tests are scheduled for administration by the College Entrance Examination Board in various centers throughout the United States in March, 1953.

Application blanks and full information may be obtained from the Foundation's executive secretary, care of New England Textile Foundation, 68 South Main Street, Providence, R. I. Final deadline for submission of applications for 1953 scholarships is January 15, 1953.

**Remedies for Trouble.** A test of the seamers' ability is of no value, unless something is done to correct the faults of those who have low ratings. Again, selvage length testing equipment may be used visibly to show the seamers whether the selvages (leg or foot) of a hosiery blank are even, longer on the right, or longer on the left side. Visible proof eliminates much controversy and has the effect of encouraging the seamer to exert corrective effort to overcome errors in technique before making selvage length complaints.

Sometimes the selvage on one side of a hosiery blank is stretched while it is moist at the knitting machine (usually due to careless handling). An efficient seamer has no trouble with stretched or otherwise irregular selvages because she watches the selvage lengths from match point to match point. A careless seamer does not see the difference in selvage lengths until the match point is almost reached, at which time it is too late to pull the short selvage without distorting the fabric.

Modern seaming machines represent a highly developed piece of equipment, but the quality of seams produced is largely determined by the skill of the seamer operator. Cooperation and understanding between the knitting and seaming departments is necessary for the production of first quality hosiery.

# Tight!

simple matter. Results have proved that the most likely location of small leaks is around valve stems, hose connections, unions, drains, home-made blow guns, and lines leading to inoperative tools. Of course, the entire system should be checked with particular attention to these and to lines which are subjected to unusually rugged treatment.

Inspection should be made monthly.

**Ways to Check Leaks.** Plant maintenance departments have come up with many simple and rather unique ways to check leaks. Most frequently used are the lighted candle or the solution of soapy water which is brushed around suspected areas. One manufacturer puts essence of peppermint into the air system. Detection of the slightest leak is by odor. Still another method is the use of what heretofore may have been considered nothing more than a youngster's toy. A small siren-like whistle, activated by air flow, is passed over the lines, a siren noise indicating a leak. Regardless of what method is adopted, when leaks are found, patch them immediately.

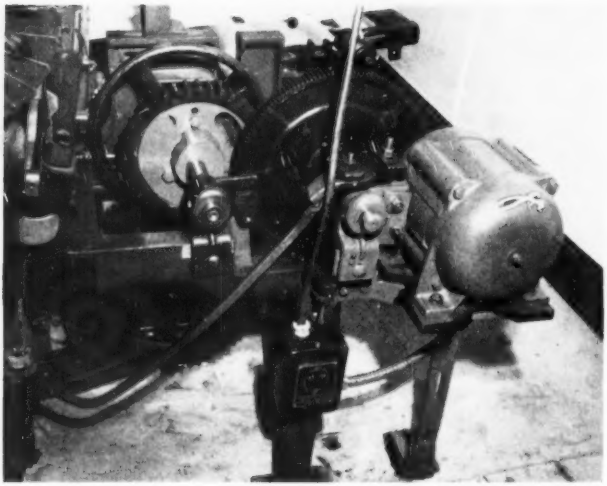
Some of the leaks may be very small, appearing trivial in themselves. But such leaks may be numerous and have a high accumulative effect. Actually, these leaks spell a very definite dollar loss as shown in the accompanying table. This dollar and cents wastage more than justifies scheduled maintenance of air distribution systems.

**A QUICK CHECK** with a hypodermic needle-gauge device indicates pressure received by tool. (Hole made by needle is self-closing.)

Couple this dollar savings to the increased productive output of the pneumatic tools and it is easy to see that it pays to keep the air lines tight.

***Cost of Air Line Leaks***

| Size of Opening (Inches) | Air Lost (cu. ft. per month at 100 psig. based on nozzle coefficient of 0.65) | Cost of Air Lost ($0.07 per 1000 cu. ft.) |
|---|---|---|
| 3/8 | 6,671,890 | 467.03 |
| 1/4 | 2,920,840 | 204.46 |
| 1/8 | 740,210 | 51.81 |
| 1/16 | 182,272 | 12.75 |
| 1/32 | 45,508 | 3.19 |



**LIGHT COLORED GEAR** at left is one of the eccentric gears on a loom at Clemson. The eccentric gear meshes with a similar gear located behind the large, speed reduction gear to its right. Note that the motor is mounted on an extension.

EXCLUSIVE

**Staff Prepared**

## *Eccentric drive gearing may*

# Improve Loom Performance

THE School of Textiles, Clemson Agricultural College, Clemson, S. C., has been experimenting for several months on the use of off-center gears for loom drives. The idea is to allot a greater part of the time of a crankshaft cycle to the movement from top center to bottom center than is allotted to movement from bottom center to top center.

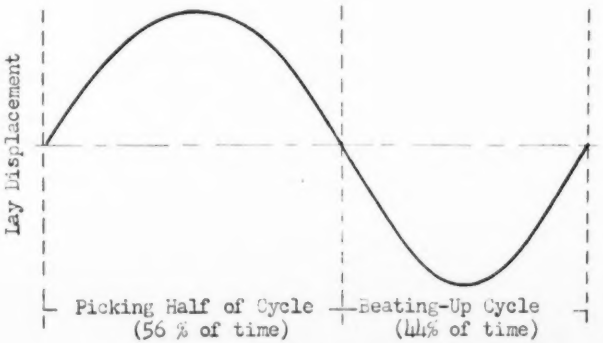
In a standard loom drive the eccentricity of the lay and the design of the cam permit a slightly greater time for picking than for beating. The Clemson design maintains these features and, in addition, the use of eccentric gears greatly increases the percentage of the cycle for picking.

At Clemson the shafts of the crankshaft drive gears were moved just 8% off from center (about .4 in.), and this slight change allows 56% of the cycle for picking and 44% for beating-up. This relationship can be changed much more by increasing the eccentricity of the gears.

By giving a greater proportion of the time in a cycle to picking, the speed of the loom can be increased without the troubles usually encountered. For example, if a

***Lay Displacement-Time Diagram***

**Crank Shaft Gears 8% Eccentric**



## Top Management Problems Changing at Unprecedented Rate

The rapidity with which the major problems facing top management in industry are changing is almost unprecedented, according to a statement by Harold F. Howard, president of the Detroit industrial and management engineering company bearing his name.

The annual study of management's top ranking problems made by the firm, and covering many industrial companies, reveals important differences from just one year ago, Mr. Howard explained.

"And," Mr. Howard said, "any list of the most pressing problems of just three years ago is obsolete today. Our own check list for top management has not only been completely revamped, but we have found it necessary to expand it approximately 25%."

Now rated as of primary importance, according to the Howard list, are: (a) executive selection and development, (b) fast acting accounting systems, (c) flexible budget controls, (d) labor standards that keep up with method changes, (e) operating costs that are in line with competition, and (f) constant product development.

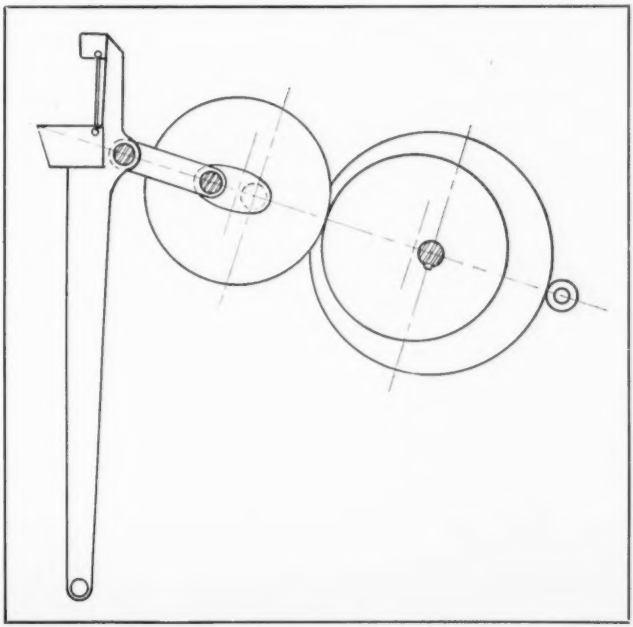
"Among today's top problems not considered as serious a year ago are executive appraisal and development programs, inspection programs that aid sales, market research for new products and rigid inventory controls," he added.

"Many of these problems," Mr. Howard pointed out, "deal directly or indirectly with 'sales', a subject that should be foremost in the minds of most top managements in industrial companies today, according to our findings. . . . Industry can meet many of its sales problems by making an all-out effort now to improve sales personnel through psychological analysis and training, reduce costs and raise productivity by constructive programs of cost accounting, improving manufacturing methods, and streamlining the operations of its executive personnel."

loom is now being run at 160 ppm, it can be speeded up to about 180 ppm, by the use of eccentric gears, without reducing the time allowed for picking. And it is this time allowed for the travel of the shuttle from box to box which largely determines the top operating speed of a loom, according to Clemson textile school officials.

The eccentric gearing arrangement, as installed on a loom at Clemson, permits an increase of about 12% in the speed of the loom without increasing the shuttle speed. Picking time is not reduced; it is the beating-up part of the cycle which has been speeded up so as to allow an increase in loom speed.

**ECCENTRIC DRIVE** arrangement between motor pinion and lay crank.



On the other hand, if these gears are used and the loom speed is kept the same, picking time is increased and the power required by the picker can be reduced proportionately.

While no mill tests have been made, results of the experiments in the laboratory indicate that eccentric gears make possible an increase in loom speeds without increasing power to the picker and without any increase in maintenance.

There are still several points to be investigated. What effect will this type of drive have on the warp breakage? Will there be an increase or a decrease in loom vibration? These questions will be answered definitely only by mill testing, but indications are that results should be favorable.

Clemson is making plans to market, through some commercial organization, a kit which would supply all the parts needed to change any cam loom to this type of drive. It would include the two eccentric gears, a jack shaft and bearings, an extension for the motor, and two pick cams. The new drive could be installed in a few hours.

# AATCC Convention

WANTED: All members of AATCC.

WHEN: November 6, 7, 8, 1952.

WHERE: Boston, Mass., Hotel Statler.

WHY: To attend the 31st annual convention of the American Association of Textile Chemists and Colorists and the AATCC Textile Dyeing and Finishing Exhibit.

Yes, fellows, the Northern New England Section, sponsors of this year's meeting and exhibit, has invited ALL of you to come to Boston for your 1952 National Convention. And there are at least four reasons why you should accept this cordial invitation:

(1) A three-day technical program which should appeal to and benefit everyone, regardless of his professional interest, has been arranged;

(2) The newest dyestuffs, chemicals and auxiliaries, synthetic fibers and fabrics, and laboratory and processing equipment will be on display;

(3) It will provide an opportunity for you to enjoy the fellowship of old and new members and supplier friends. (It would surprise those of you who have never been to one of these affairs to know how many answers to processing and other problems are developed during the informal "after-hour" discussions.)

(4) Special entertainment has been planned for AATCC members and their ladies who will attend. As for those who have not previously had the occasion to visit the historic "Bay City" an "extra special treat" is in store for you.

So, if you have not already returned your registration envelope mail it today.

**Hotel Reservations.** Adequate hotel accommodations are available either at the Hotel Statler, Parker House, Hotel Touraine, Sheraton Plaza, or Hotel Bradford. Reservations may be made *only* through the Registration Committee, however.

**The Convention Program.** A meeting of the National Council and the Student Chapter Prize Paper Contest are scheduled for Thursday morning, November 6. At the first technical session, to be held Thursday afternoon, two papers will be presented: "Climate and Clothing from a Physiological Point of View" and "Sensation, Psychology, and Science." Movies on various textile subjects will be shown in the evening.

On Friday's agenda are two technical sessions in the morning, the Olney Medal Award Luncheon (at which time the Student's Prize Paper Award will also be presented), another technical session in the afternoon, and a concert by the Boston Pops Orchestra in the evening.

Methods for producing bonded fiber fabrics, new polymers for the formation and modification of textile fibers, and static electricity are topics to be considered in one of the technical sessions on Friday.

Another session will be devoted to a "Symposium on Stream Pollution." Public Law 845 and the cooperation between government and industry, in-plant process control for the reduction of waste, and activities of AATCC in stream pollution will be discussed.

Finally, continuous dyeing with special reference to synthetics, instrumental control of the dyeing of carpet stock, and application of Redox potential control to the copper method for dyeing acrylic fibers will serve as a basis for a panel discussion.

On Saturday morning the Intersectional Prize Paper Contest will be held, followed by a Textile Schools Alumni Luncheon and a Annual Banquet in the evening.

**The Exhibit.** There will be 54 firms displaying their equipment

## *Suggested Restaurants in Greater Boston*

### Seafood

Dini's Sea Grill, 94 Tremont Street
Pieroni's Sea Grill, 7 Park Square
Gateway Oyster Bar, South Station
Lobster House, 42 Warren Avenue
Union Oyster House, 41 Union Street
Touraine Hotel Seafood Bar, Boylston St.

### Specialty

Childs Dining Hall, 177 Tremont Street
Dinty Moore's, 611 Washington
Eddie Davis' Steak House, 444 Stuart St.
Durgin-Park, 30 North Market Street
Hi-Da-Way, 3 Boylston Place
Joseph's, 279 Dartmouth Street
Locke-Ober, 3 Winter Place
Thirty-Nine Newbury St., 39 Newbury St.
Newbury's Steak House, 279a Newbury St.
Novack's Towne Terrace, 1700 Beacon St.
Patten Restaurant, 41 Court Street
Red Coach Grill, 42 Stanhope Street
Schrafft's Stores, 16 West Street
Steuben Vienna Room, 114 Boylston St.
Warmuth's Restaurant, 280 Devonshire St.
Salmagundi Restaurant, 222 Beacon St.

### Foreign Food

Athens Olympia, Greek, 51 Stuart Street
Boraschi Cafe, Italian, 21 Corning St.
China House, Chinese, 146 Boylston St.
DuBarry Restaurant, French, 159 Newbury St.
Gamsun's Restaurant, Chinese, 21 Hudson St.
Vendome Hotel, French, 150 Commonwealth Ave.

### Hotels

Bradford Hotel, 275 Tremont Street
Hampshire House, 84 Beacon Street
Kenmore Hotel, Kenmore Square
Parker House, School Street
Ritz-Carlton Hotel, Arlington Street
Shelton Hotel, 91 Bay State Road
Sheraton Plaza Hotel, Copley Square
Somerset Hotel, Kenmore Square
Statler Hotel, Park Square

### Self-Service

Albiani Restaurants—several stores
Hayes-Bickford Lunch System—several stores
Howard Johnson's—several stores
Sharaf's Inc.—several stores
Waldorf System—several stores
Walton Lunch Co.—several stores
Thompson's Spa—several stores

# Boston, Nov. 6-8

and materials in the Georgian Room and parlors on the Hotel Statler Mezzanine, according to Campbell - Fairbanks Associates, the exhibition management.

Exhibition hours are: November 6 and 7, 10:00 A.M. to 10:00 P.M.; November 8, 9:30 A.M. to 12:00 Noon. Attendance is by convention registration.

**CONVENTION HOTEL,** the Statler at Park Square. Four others are cooperating to accommodate all who are planning to attend.

## ——List of Exhibitors and Floor Plan of Exhibition Area——

To locate a supplier friend whose firm has contracted for space in the 1952 AATCC Textile Dyeing and Finishing Exhibit:

(1) Find in the alphabetical listing below the name of his company and note the number opposite it;

(2) Now look at the floor plan at the right. Where that number appears on this diagram is where you will find his booth.

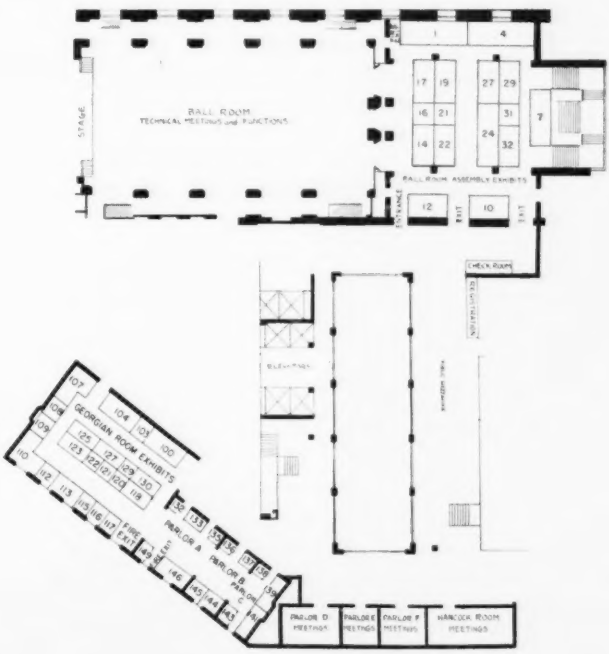
Note that all exhibit areas are on the mezzanine level. Booths No. 1 - 32 will be found in the Ballroom Assembly (upper right on diagram). Booths 100 - 149 are located in the Georgian Room and Parlors A, B, and C (lower left portion of diagram).

| | |
|---|---|
| Alco Oil & Chemical Corp. | 139 |
| Alexander Smith Products | 118 |
| American Aniline Products Inc. | 130 |
| American Association of Textile Chemists & Colorists | AA-BB-CC |
| American Bemberg Corp. | 108 |
| American Dyestuff Reporter (Publication) | 16 |
| American Optical Co. | 135 |
| America's Textile Reporter (Publication) | 132 |
| Anderson Machine Shop Inc. | 115 |
| Atlas Electric Devices Co. | 136 |
| Bersworth Chemical Co. | 27 |
| Calco Chemical Division American Cyanamid Co. | 104 |
| Catalin Corp. of America | 110 |
| Celanese Corp. of America | 4 |
| Ciba Company, Inc. | 17 |
| The Cravenette Co., USA | 109 |
| Custom Scientific Instruments, Inc. | 149 |
| Dow Corning Corp. | 22 |
| E. F. Drew & Co., Inc. | 19 |
| E. I. duPont de Nemours & Co. Dyestuffs Division | 24 |
| E. I. duPont de Nemours & Co. Textile Fibers Department | 7 |
| Emery Industries, Inc. | 10 |
| Fairchild Publications | 10-A |
| Gaston County Dyeing Machine Co. | 116 |
| Geigy Company, Inc. | 14 |
| General Dyestuff Corp. | 107 |
| Hilton Davis Chemical Co. | 113 |
| E. F. Houghton & Co. | 137 |
| Instrument Development Labs. | 103 |
| Interchemical Corp. | 120 |
| Kelco Company | 144 |
| Macbeth Corp. | 145 |
| Monsanto Chemical Co. | 146 |
| National Aniline Division Allied Chemical & Dye Corp. | 100 |
| National Milling & Chemical Co. | 122 |
| National Starch Products Inc. | 141 |
| Napco Chemical Co. | 125 |
| North American Rayon Corp. | 108 |
| Owens Corning Fiberglas Corp. | 133 |
| Rayon and Synthetic Textiles | |
| Rohm & Haas Co. | 123 |
| Royce Chemical Co. | 32 |
| Sandoz Chemical Works, Inc. | 29 |
| Seydel-Woolley & Co. | 129 |
| Socony Vacuum Oil Co., Inc. | 21 |
| Tennessee-Eastman Corp. | 1 |
| Textile Age (Publication) | 112 |
| Textile Bulletin (Publication) | 121 |
| Textile Industries (Publication) | 138 |
| Textile World (Publication) | 117 |
| Union Carbide & Carbon Corp. Textile Fibers Division | 31 |
| Virginia-Carolina Chemical Co. | 143 |
| Virginia Smelting Co. | 12 |
| Wallerstein Company, Inc. | 127 |

**Floor Plan—AATCC Textile Dyeing and Finishing Exhibit**

*Hotel Statler, Boston, Mass., Nov. 6-8, 1952*

All Exhibit Areas Are on Mezzanine Level



## $2,171,435,000 Used to Benefit Foreign Textiles

(*Continued from page* 105)

local currency.

Technical assistance provided with MSA funds has been financed in the same manner that raw cotton and machinery are made available; that is, through the payment of "counterpart" moneys by manufacturers of the respective countries. Technical surveys, the sending of American experts abroad, and the visits to the United States of study groups from the MSA-aided countries are grouped under the general heading of technical assistance.

A list of countries which have participated in such assistance programs and the dollar amounts involved follows:

| | |
|---|---|
| Austria | $ 11,250 |
| Belgium | 37,412 |
| Denmark | 2,300 |
| France | 82,208 |
| Germany (Fed. Rep.) | 42,226 |
| Netherlands | 28,175 |
| Norway | 20,120 |
| United Kingdom | 76,842 |
| Miscellaneous | 2,500 |
| Total | $303,033 |

Recapitulated, the sums expended for SCAP gifts of cotton in Japan, for MSA allocations of raw cotton, machinery, and various types of technical assistance during the past five years amount to a grand total of $2,171,435,000, which has been utilized to benefit textile operations overseas.

It is not the purpose of this article to discuss this astronomical figure; the objective was to make a brief survey of the foreign aid programs and gain some estimate of their total dollar commitment.

*The architects of the government's foreign aid policy hold that these funds are making it possible for the needy nations to maintain their normal trade patterns, keep their people at work, and help themselves build up their own economic and military defenses against the Communistic danger.*

*But there are many in the textile industry who, while perhaps agreeing in some degree with this principle, are forced to question why they, their mills, and their employees must shoulder the heaviest part of the burden.*

While taking a long look at the current world situation in textiles, they recall the Lend-Lease era, the lowered tariffs that came with reciprocal trade agreements, the utterances by Secretary of State Acheson that America should encourage importation of more goods as a further means of enabling foreign nations to acquire dollars.

A few more such steps, they say, and the administration may have to resurrect WPA to take care of jobless Americans.

With the figures and these arguments pro and con, you may now draw your own conclusions.

## 1952 N. C. State Textile Conclave

The 3rd annual Conclave for alumni of the School of Textiles, North Carolina State College, is planned for October 24 and 25 at the School in Raleigh, N. C. A technical and social program is planned.

The technical program will include several speakers who will present papers to bring graduates up-to-date on research and technical developments in the industry. The social program will consist of a dinner on Friday evening, Oct. 24, at the Tar Heel Club, and a football game on Saturday, Oct. 25, between N. C. State and Florida State College. The date for the conclave coincides with the annual N. C. State homecoming.

## TV Showing Scheduled for Textile Film

The new 26-minute film, "The Greater Goal" [first shown at this year's ACMI convention, TI for July, page 83], depicting the modern story of textiles in dramatic sequence, had its premier television showing in the South at 9:30 P.M., Tuesday (Aug. 5), over station WBTV, Charlotte, N. C.

The film was produced by Lou Loft of New York for Textile Information Service, public relations agency of the textile industry. The 16-mm film is in color but a black and white print has been prepared for television showing.

Textile people are shown at work and at play; the film also deals with various manufacturing and merchandizing processes as well as the human aspects of the industry.

## Joint Armed Services Procurement Agency Formed

To provide the most economical and effective method for the procurment of clothing, footwear, and textile items for the three military services, the Department of Defense Munitions Board has established an Armed Services Textile and Apparel Procurement Agency with Brig. General Robert P. Hollis, commanding general of the New York Quartermaster Procurement Agency, as its head. Joint procedures for the agency are to be developed and in effect by early next year.

Under policies set by the Munitions Board, the agency will procure textile fabrics, apparel, textile personal and organization equipment and related items for the military services, as assigned by the Board. It will be responsible for the operational phases of procurement planning, phasing the submission of requirements, consolidating requirements, analyzing the market and determining patterns for the phased placement of orders in such a manner as to assure meeting the needs of the services at the lowest possible price to the Government, and at the same time avoiding unnecessary peaks and valleys of production and hence undue harmful impact upon industry.

EXCLUSIVE

**TIME STUDY ENGINEER** checks operator tending spindles from left to right, as in cycle method.

# Work Load Calculations for Winding Machines

By **JESSE W. STRIBLING**
*Universal Winding Company*

THIS ARTICLE* is to cover work-load calculations for hand-operated winding machines only, since automatic winders, where bobbins are changed and knots are tied automatically, require entirely different treatment.

Until comparatively recent years, no scientific methods were used to estimate the number of spindles an operator should tend and the production she should turn off. However, it is possible today, after years of scientific study and actual experience, to predetermine the number of spindles an operator should handle and the approximate production in pounds which she should turn off in a given time.

Before going too far into such a discussion, it would probably be wise to cover first a few general details about the two principal types of winders, with the different principles involved; and possibly a definition or so will be in order, so that confusion will be prevented.

There are two general types of winding machines:

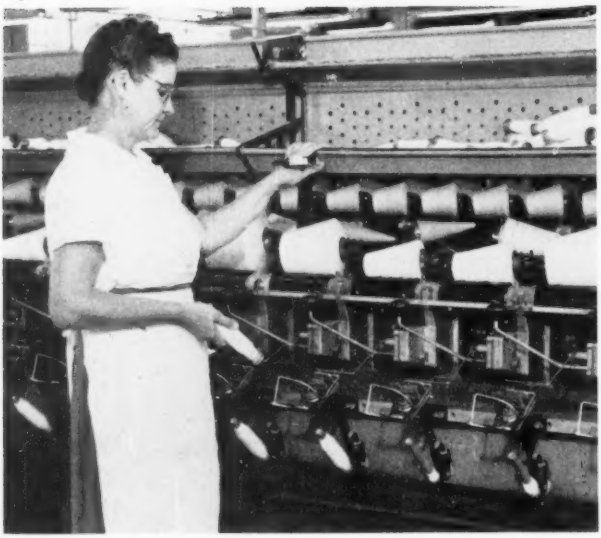
**Drum Winders**, where the package is driven by frictional contact with a revolving drum, with either a reciprocating thread guide or rotating traverse. This is the type of machine in most general use.

On this type of machine the yarn speed is constant, as the *surface* of the package is driven by the surface of the drum, which has a constant speed.

**Precision Winders**, where the winding spindle and the package turn at a uniform speed *in revolutions per minute*. On this type, the spindle speed is constant, but the yarn speed increases as the diameter of the package increases. This is in distinct contrast to the drum winder, where the yarn speed is constant but the revolutions of the

*This article is a revision of the series which appeared in this magazine during 1943; following publication the series was reprinted, and popular demand has exhausted the supply. The present article contains additional data essential to accurate figuring of work load calculations for winding machines and includes experience gained over the last nine years.

*REPRINTS of this article are available and will be supplied to readers at no charge. Address your request to the editors.*



**WAITING** for next supply bobbin to empty; this operator has too few spindles.

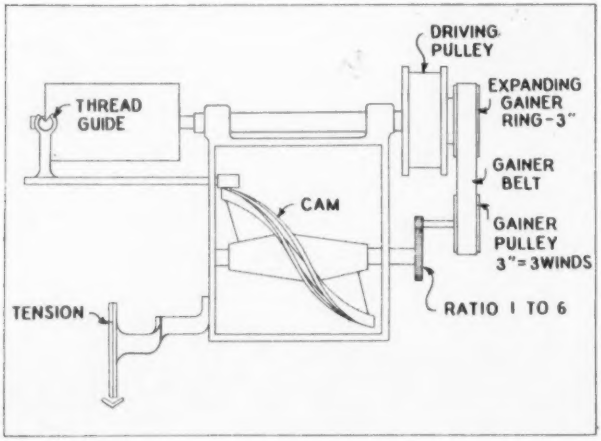
package decrease as the package fills up.

On a *precision* winder, the package is fixed on the spindle, and since the spindle has a uniform speed in revolutions per minute, the yarn speed will *increase* as the package increases in diameter.

With these generalities out of the way, we now come to the actual operation of the machines. We shall deal first with drum winding, because that is the type of equipment in most common use.

The "rule-of-thumb" on old-type slow-speed drum winders was to give a girl about 50 spindles, regardless of the length of yarn on the bobbin. This meant that on long-yardage bobbins the operator was not kept busy and wasted a great deal of time waiting for the bobbins to run out. In such cases her production was low and the piece rate high. On short-yardage bobbins, usually very coarse yarn, the bobbins were exhausted much more quickly, with the result that the operator was kept busy all the time and her production was high, with the piece rate low. These conditions usually meant a graduated scale of piece rates from low on coarse yarns to high on fine yarns.

**PRECISION WINDING MACHINE.** Illustrating the principle of this type of machine. On some types, a cone-shaped pulley is used instead of the expanding gainer ring shown.

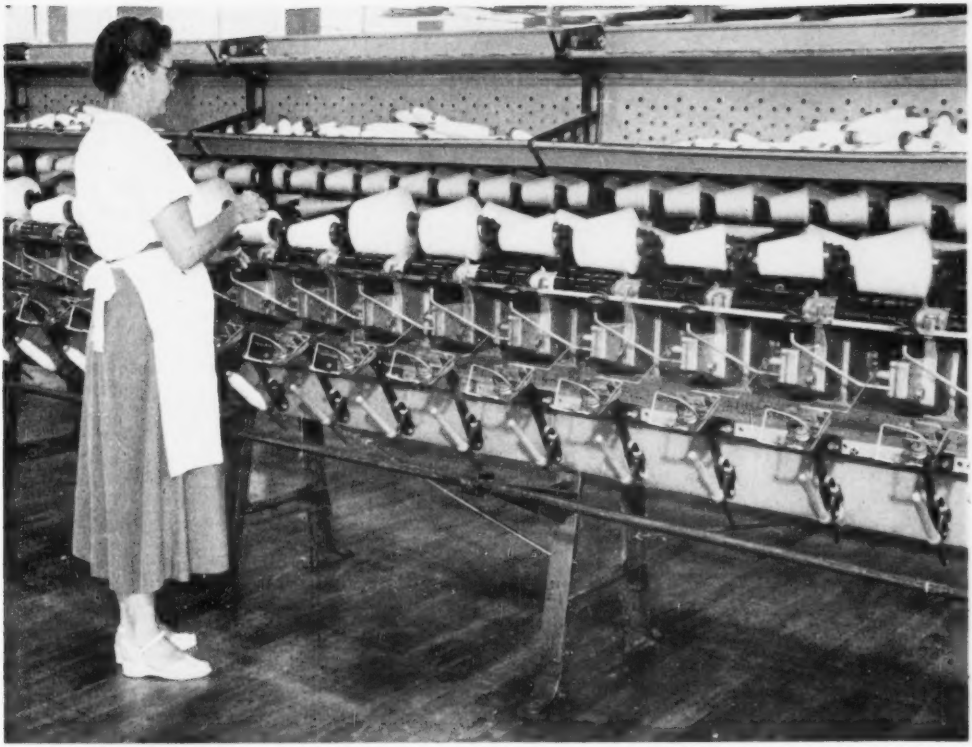



**Analysis of Operations.** With the advent of modern high-speed winders, management began to show interest in a scientific method of determining the actual amount of work, or time, involved in the different elements of winding yarns, from which could be calculated the production that an average operator should turn off on any yarn and the number of spindles she should be allotted for that production. The elements involved are shown in the accompanying box.

**ELEMENTS**

1. **Change full bobbin:**
   a. **Remove and dispose of empty bobbin.**
   b. **Pick up full bobbin, find end, remove surplus yarn from base of bobbin, place on supply spindle, and thread tension.**
   c. **Find end on package, tie knot, and start spindle.**
2. **Retie breaks. (Practically same as "c" above, because broken end is usually found in tension bracket.)**
3. **Gauge and doff full package.**
4. **Clean machine.**
5. **Fatigue allowance.**

The times required for performing each of these elements will be fairly uniform for the range of yarn counts usually produced in a given mill, although it is recognized that there will be a difference between very coarse and very fine yarns. For example, it will take longer on 60s single yarn than it will on 10s, because the operator will have to be more careful in handling 60s to prevent breaking the end as she pulls the loose end from the package to tie the knot. Also, it takes more time to find the loose end on the pack-



**TOO MANY EMPTY SUPPLY BOBBINS** ahead; this operator has too many spindles. She is servicing spindles in cycles, from left to right, and doffing full cones at random, as they reach full diamete .

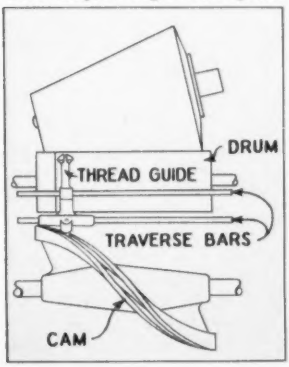
age on very fine yarns.

However, in a mill spinning from, say, 10s to 30s, the element times should be fairly uniform. If a mill is spinning from, say, 40s to 60s, the element times will be greater but the same times can be used for the range of counts.

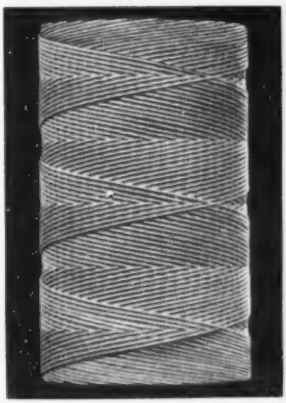
With the unit times for the different elements remaining constant for a given range of yarns being produced, it is obvious that the total time required by the operator to wind *one bobbin* of yarn will be the same regardless of the yarn count in the given range, provided the end breakage is fairly uniform. This means that the production of the operator will depend upon the net weight of yarn per bobbin, practically regardless of the yarn count.

Therefore, since an operator's production depends upon the weight of yarn on the bobbin, the piece rate for the given range of yarns will be the same, so long as the net weight of yarn per bobbin remains the same and the *end breakage remains fairly constant*. Consequently, if a mill is spinning from 10s to 20s on, say, 2-inch rings, the net weight of yarn per bobbin will be fairly uniform, which means that the same piece rate can be used for the different

**DRUM WINDER,** illustrating type with reciprocating thread guide.




**PRECISION WOUND** tube (three winds).

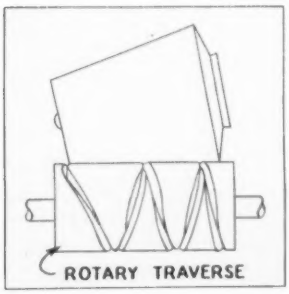


**DOFFING FULL CONES IN SETS:** cones fill up together. Operator is doffing first full cone on her assignment.

counts which are spun on 2-inch rings.

It is clear that 20s will have approximately twice the *yardage* of yarn per bobbin as will 10s. Therefore, an operator should tend about twice the number of spindles on 20s as she should on 10s, but her production will be approximately the same. The method of determining the number of spindles per operator will be fully covered later.

**DRUM WINDER,** showing rotary-type traverse. Intersecting groove traverses yarn as the surface of the drum drives the package.




**End Breakage.** It can be readily seen that the major part of an operator's time is taken up by Element 1 (changing full bobbins), and Element 2 (tying breaks). The unit times for these elements will be fairly constant for the different yarns and for different operators, although it is recognized that some operators are naturally faster than others. Therefore, about the first thing to be done is to determine the number of breaks per 100 bobbins of yarn, usually expressed in percentage. For instance, if the average of a great many tests shows 20 breaks tied up per 100 bobbins of yarn wound, the figure 20 per cent is used.

The importance of getting this figure as accurately as possible cannot be over-emphasized. The tests should cover a great many bobbins from many different spinning frames. A good method is to assign one man to the tests and have him follow one winder tender for several hours at a time. He should carry a pad and indicate each time the operator changes a full bobbin and each time she ties up a broken end. This is done continuously for several hours.

Let us suppose that during the time he follows a certain operator, his pad shows a total of 910 full bobbins changed and 182 breaks tied up. The end breakage is:

$$\frac{182 \times 100}{910} = 20 \text{ per cent}$$

He should then change over to following another operator and repeat the test. From the totals an average figure can be obtained which will be accurate enough for the entire job, unless individual tests show too much variation.

These tests should be repeated from time to time to check on the quality of the yarn being spun and on the settings of the slubcatchers. Naturally, if the percentage of end breakage should change and remain changed, the piece rate will have to be revised to conform to the new end breakage. However, if the end breakage should go up, the natural consequence would be to investigate the cause and correct it rather than change the rate. If the breakage should go down and remain consistently lower, better spinning is indicated and a lower piece rate would be justified. The question of whether the rate should be reduced would be up to the management.

Element 3 covers the gauging and doffing of full packages. The time for this element will remain constant for the average range of yarns in a given mill, provided the net weight of yarn per package is constant and there is not much variation in the weight of yarn per spinning bobbin. If 3-pound cones are being wound, with 4 ounces of yarn per bobbin, there will be 12 bobbins per cone regardless of the yarn count. Therefore, the time for this element will be constant.

Element 4 covers cleaning. While the time for this element could be figured down to a bobbin basis, it seems simpler to express it as a percentage of the operator's total time and deal with it sepa-

rately. In some mills the cleaning is done after each doff of full packages or after every other doff. In other cases it is done at stated periods, such as once every 8-hour shift or twice each shift. Regardless of when done, the time for cleaning an operator's assignment of spindles can be easily determined by tests. For example, if cleaning is done every four hours and it takes the operator 10 minutes to clean off her job:

$$\frac{10 \times 100}{4 \times 60} = 4.1\%$$ of her total time for cleaning.

**Methods of Doffing Full Packages.** In some mills the practice is to have the packages fill up together on an operator's job, so that all her spindles will doff at approximately the same time. In these cases the cleaning is done at the end of every doff or every other doff, and it is a simple matter to figure the percentage of time required for cleaning as against the total time between cleaning periods.

And this brings up a question which is often raised. Is it better to have the packages fill up together or to let them fill up at random and be doffed, and the spindles re-started, as they reach the full diameter? The winding cost is always lower where the packages are doffed individually as they reach full diameter; however, in some cases it is necessary that they be doffed in sets.

For example, where a mill has a number of small orders to fill, each calling for only a few cases of special yarns, it simplifies the job to put the required number of operators on each order and tell them how many doffs to wind. This is figured out beforehand as to the number of doffs required to fill the order. In such a case, the time of "tailing-out" an order is saved, as it would take several hours for each operator to fill up all the packages on her job if the doffs are broken up.

Also, in mills which spin a wide variety of yarns, calling for the counts being changed often on the winders, time is saved in tailing-out each operator's assignment of spindles by having the packages fill up together.

**DOFFING FULL CONES IN SETS:** all spindles on her assignment remain idle until last two cones reach full size and are doffed.

In those mills where the counts are not often changed, where each machine will run for days at a time on the same yarn, there is no question but that time is saved by doffing each package as it becomes full and then starting up that spindle immediately, without waiting for the remainder of the spindles to fill up. This will mean that the operator's production will be higher, with a corresponding decrease in winding cost.

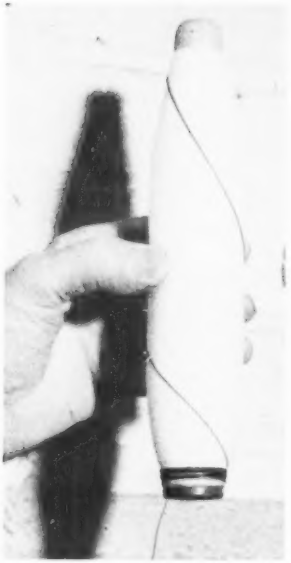
**Operating Methods.** Before going into a detailed analysis of the two different methods employed by the winding machine operator in tending her allotment of spindles, it might be well to discuss them briefly.

The first, and the one giving the lowest direct winding cost, is where the operator works in "cycles;" that is, she works from one spindle to the next, never doubling back to tie a break or change a bobbin. In this way, she does not lose the time of walking the distance of several spindles. She starts at one end of her assignment and services each spindle consecutively to the other end. When she reaches the end of her assignment, she walks back to the first spindle, without stopping to tie breaks, and repeats the cycle.

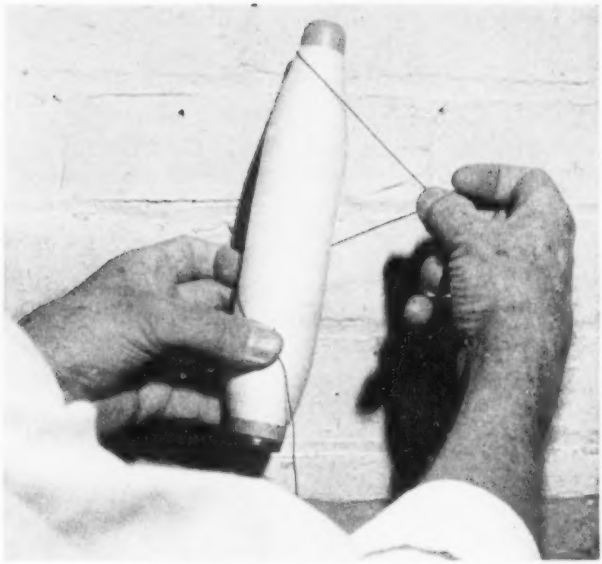
It will be obvious that she can service a spindle—either change a bobbin or tie a break—in less time, where she moves only the distance of one spindle, than she can where she has to walk the distance of several spindles every time she services a spindle. This being true, the question may be asked: Why not always have the operators work in cycles?

The answer is that where the end breakage is excessively high there will be so many inoperative spindles that the machine efficiency will be very low, and the added investment in winding machines will be appreciable. It should be remembered that, where the operator works in cycles, a broken end must wait until she reaches that spindle on her next cycle. It can readily be seen then that where the end breakage is extremely high, a great many of her spindles will be standing an appreciable part of the time.

The second method, which we call the "random" method and which is more appropriately used where the end breakage is high, is for the operator to tend fewer spindles and keep those spindles in operation a higher percentage of the time by servicing each spindle



**DOFFER CAN HELP:** there are too many wraps of yarn around base of bobbin.



**DOFFER OF THIS BOBBIN HAS HELPED:** no surplus yarn around base of bobbin; operator can easily pull end off side of bobbin.

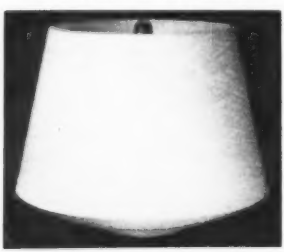
as it becomes inoperative. This will mean higher direct winding costs, but in some cases it is necessary in order to obtain a high machine efficiency, as contrasted to high operator efficiency. The reason for the higher direct winding costs under this method is, of course, that the unit times for the principal elements—changing bobbins and tying breaks—will be higher, caused by the operator having to lose more time in walking to the inoperative spindles, averaging the distance of several spindles between operations.

**The Spinning Doffer Can Help.** At this point, perhaps a parenthetical word should be added as to the importance of the proper training of the doffers on the spinning frames, in relation to the work of the winder tenders.

A great deal of time can be saved for the winder tenders if the doffers are properly trained to leave only enough yarn around the base of the spinning bobbin to permit the bobbin to be drawn off over the top of the spinning spindle in doffing. Of course, it is much less trouble for the doffer to run the rail down and then run on plenty of wraps of yarn around the base of the bobbin so as to be sure that the end will not be broken in removing the full bobbin from the spindle. However, all those extra wraps of yarn must be removed by the winder tender before she places the bobbin on the supply spindle of the winder. If there happens to be a nick or rough place on the base of the bobbin, it takes even longer, because the surplus yarn has to be pulled off over the base of the bobbin.

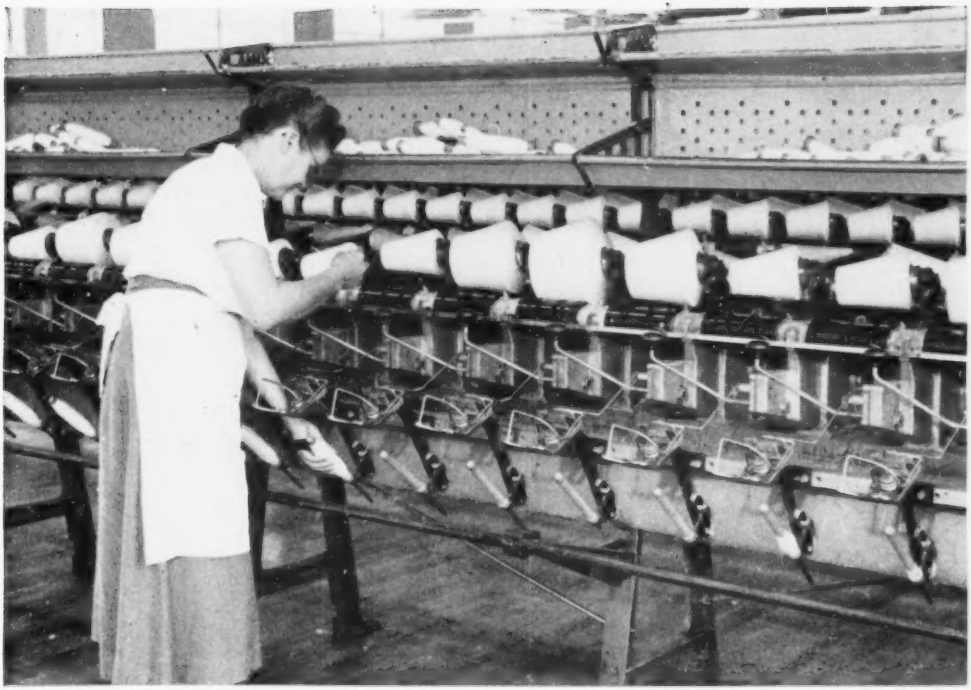
The doffers can be trained to where they become expert in knowing just how much yarn to run around the base of the bobbin, enough to permit the bobbin to be removed over the top of the spinning spindle with just about one wrap left around the base of the bobbin after breaking the end. When such a bobbin reaches the winders, the winder tender has only to pick up the end where it runs down the side of the bobbin and pull the loose end off over the top of the bobbin, without having to unwind it over the base end. While this may seem a minor point, when it is considered how many bobbins a day are handled by each winder tender, it is readily apparent that the saving of a small fraction of a minute on each bobbin means an appreciable saving in the total time of the winder tenders.

A DRUM-WOUND CONE



**The Cycle Method.** Examples of each of the two methods of tending the spindles are cited, illustrating first the "cycle" method.

Referring to the elements in a winder operator's job, for Element 1—changing full bobbin—experience and a great many time studies have shown that an *average experienced* winder tender should change bobbins at a rate of .12 min. per bobbin on counts of yarn from say 10s to 30s, where



**FOUR EMPTY SUPPLY BOBBINS** ahead; this operator has about the correct assignment, Cycle Method.

she works in cycles and moves only the distance of one spindle between bobbin changes.

For Element 2—re-tying breaks—it has been found that the same operator should tie breaks in .08 min. per break when working in cycles.

These element times will be higher when servicing spindles at "random," but those times will be covered at the appropriate time.

For changing packages—Element 3—perhaps it would be well to first explain just what is involved. In almost all cases, the package will be changed upon the emptying of a bobbin. Consequently, the total operation involves removing the full package, placing an empty tube or cone on the spindle, and starting up a full bobbin of yarn, although there will be no knot to tie.

The unit time for the complete operation is .23 min., but it should be remembered that the operator will have started a new bobbin to winding, this bobbin being included in Element 1. Since .12 min. is allowed under Element 1 for changing the full bobbin, this means that only .11 min. is used for changing the package, representing the difference between .23 min. and .12 min.

In combining the different elements into the total amount of work, or time, involved in winding a given quantity of yarn, it is immaterial as to the amount of yarn used for the calculation. There are several convenient units to use in working this out, such as the arbitrary weight of 100 pounds, or by simply using 100 bobbins as a basis.

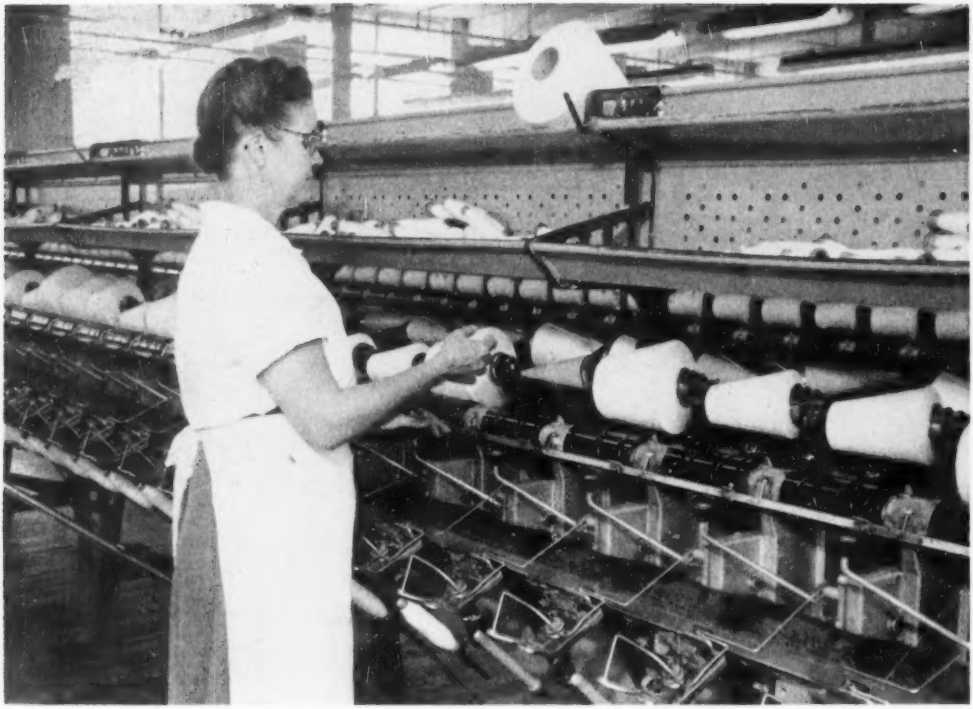
In the examples and calculations to follow, we shall use a unit of 100 bobbins, since it is convenient for calculation purposes.

Based upon 100 bobbins to be wound and assuming 20 per cent end breakage, with 12 bobbins per package, we get an analysis of the work involved as shown in Fig. 1.

It will be observed that this analysis represents all the work in-

Fig. 1

| ELEMENTS | | | | (Cycle Method) |
|---|---|---|---|---|
| 1. | 100 bobbins changed | X | .12 min. | = 12.00 mins. |
| 2. | 20 breaks tied | X | .08 min. | = 1.60 mins. |
| 3. | 8.3 packages changed | X | .11 min. | = .91 min. |
| | Allowance for walking time | | | = .49 min. |
| | Total for 100 bobbins wound and 120 spindles serviced | | | = 15.00 mins. |



**CYCLE METHOD** of servicing spindles and random doffing of full cones. Operator has doffed full cone and started another; several inoperative spindles to her right.

volved in the winding of 100 bobbins of yarn except for cleaning and other miscellaneous duties. It will also be observed that the yarn count has no bearing on the result, nor does the amount of yarn per bobbin, except inasmuch as it affects the number of cones changed per 100 bobbins wound. In this case, we used 4 ounces per bobbin and 12 bobbins per package, representing 3 pounds.

Since the operator has actually wound 100 bobbins of yarn in 15.00 minutes, the total time *per bobbin* is .15 minute.

In figuring the production per operator, we now must take into account the element of cleaning and miscellaneous duties, as well as fatigue. We shall assume 5 per cent of the operator's total time for cleaning and miscellaneous (24 minutes per 8 hour shift) and 10 per cent of her total time for fatigue, giving a total allowance for these elements of 15 per cent. Therefore, the production per operator per hour is:

$$\frac{60 \text{ Mins.} \times 85\%}{.15 \text{ Min.}} = 340 \text{ bobbins}$$

Assuming that the bobbins contain 4 ounces of yarn, 4.0 bobbins per pound, we get a production of:

$$\frac{340 \text{ Bbns.}}{4.0 \text{ Bbns. per Lb.}} = 85 \text{ Lbs. per operator per hour}$$

**Piece Rate.** In figuring, from the above production, the piece rate to be paid, there is one very important point to be kept in mind. It was stated that the element times used were for *average experienced* operators. In order to comply with the minimum wage established by law, or by the mill, which is usually higher, the piece rate should be so fixed that practically all operators will earn the minimum wage or more. This will mean that the average experienced operator will earn considerably more than the minimum. If the piece rate is so figured that the experienced operators will average only the minimum wage, there is no incentive for reaching higher productions, because they know that they *must* be paid the minimum wage.

It has been found that if the piece rate is fixed so that the *average experienced* operators will earn about 15 per cent more than the minimum wage, an incentive is provided and the less experienced winder tenders will still earn the minimum wage. The necessity of having to "sweeten" the pay of the slower girls will be largely eliminated.

Therefore, to convert the production found in the given example to an actual piece rate—assuming that the rate is to be based on a doffer box of 126 bobbins, and assuming a minimum wage of $1.00 per hour:

$$\frac{340 \text{ Bbns. per op. per hour}}{126 \text{ Bbns. per box}} = 2.7 \text{ boxes per op. per hour.}$$

$$\frac{100c \times 1.15}{2.7 \text{ boxes}} = 42.6c \text{ per box, piece rate.}$$

**or, to simplify the formula:**

$$\frac{\frac{100c}{\text{(per hr.)}} \times 1.15 \times \frac{126}{\text{(bbns. per box)}}}{340 \text{ bbns. per op. per hour}} = 42.6c \text{ per box}$$

**Spindles per Operator.** To calculate the number of spindles which an operator should tend in order to obtain the production outlined in the given instance, we first must obtain an average time for servicing each spindle. It is important to remember here that the operator is working in cycles. Consequently, in changing 100 full bobbins and tying up 20 breaks, she has really *serviced* 120 spindles. Therefore, if we divide the number of spindles *serviced* into the time required to service those spindles, we get:

$$\frac{15.00 \text{ Mins.}}{120 \text{ Sps. serviced}} = .125 \text{ Min., average service time per spindle.}$$

And now, for the first time, we must use the actual yarn count under consideration. For the purpose, we shall assume 16s yarn, 4 ounces per bobbin or 4.0 bobbins per pound, 3,360 yards per bobbin, and a winding speed of 550 yards per minute. At that speed, the bobbin of 3360 yards will run 6.11 minutes, to which should be added .30 min. to allow for the spindle to stop turning after the package rises from the driving drum.

Dividing this total time (6.41 mins.) by the average *service time per spindle* (.125 min.) we get 51.3 spindles which the operator should tend (assignment would probably be 50 spindles).

The basic principle of the cycle method is that the time of making one complete cycle will be the running time of the bobbin plus the time it takes for a spindle to stop turning when it rises from the driving drum, as the spindle should come to a stop before being serviced. (If the operator stops the spindle by "braking" the package with her hand, there is danger of breaking or tangling the yarn on the surface.) Therefore, by the time the operator has serviced her last spindle, the bobbin which was started up on the first spindle will be exhausted—and the spindle will have stopped turning—by the time she gets back to that spindle on the next cycle.

While the element times used in these illustrations are considered appropriate for an average experienced operator, it should be kept in mind that they may not be applicable to all jobs; some operators are naturally faster than others, and there may be other local conditions which may affect the unit times. Actual time studies should be made on the job to determine the unit times to be used, and care should be taken to insure that they represent average experienced operators, not learners or the fastest operators on the job.

After the element times are established, care should be taken in finally determining the number of spindles per operator. The assignments as determined by the element times will be for an average experienced operator; faster operators should have more spindles and slower operators, fewer spindles.

Where the cycle method is used, a casual inspection of a winding room will usually disclose whether the spindle assignments are correct. If an operator is waiting for spindles to run out ahead of her, or if she is braking spindles by hand instead of waiting for them to stop turning, it will be obvious that her spindle assignment is too low.

On the other hand, if there are a large number of inoperative spindles ahead of her, she has too many spindles; her assignment should be reduced. However, a few empty spindles are not objectionable; she will have an incentive to speed up and keep all spindles producing, thus increasing her earnings.

**Walking Time.** Of course, it takes some time for the operator to walk from the last spindle in her cycle to the first spindle.

This walking time is included in the total time required to wind 100 bobbins of yarn, as shown in Fig. 1. Before it can be computed, it is

**THIS IS WRONG:** operator should never brake package with her hand; the knotter may damage the yarn.

**IN PAYING OPERATORS** by the box of yarn, the yarn man punches the operator's card for each box poured into trough.

first necessary to estimate by "rule of thumb" the number of spindles per operator. For the purpose, it has been found accurate enough to multiply the running time of the bobbin by eight. In the example given, the running time is 6.11 mins. Therefore, 6.11 x 8 = 49 spindles per operator (50 spindles used).

The next step is to determine the number of cycles the operator will make in winding 100 bobbins of yarn. Referring to Fig. 1, it is seen that she will service 120 spindles in winding 100 bobbins of yarn. Therefore:

$$\frac{\text{120 spdls. serviced}}{\text{50 spdls. per operator}} = \text{2.4 cycles per 100 bobbins wound.}$$

It is now necessary to compute the distance walked by the operator from the last spindle to the first spindle of her assignment on each cycle. In the example given, this is fairly easy, because the 50-spindle assignment will probably be one side of a 100-spindle machine. On other assignments, it is necessary to use the actual distance walked at the end of each cycle, but this is not too complicated.

In operating 50 spindles on one side of a machine, the operator will start at one end of her assignment and start spindles consecutively to the other; she will then walk back to the first spindle, in this case the distance of 49 spindles. The distance between spindles is usually about ten inches.

$$\frac{49 \times 10''}{12''} = 40.8 \text{ ft. walked at the end of each cycle.}$$

Next, we consider the average speed at which an average operator will walk. Experience has shown that 200 ft. per minute is reasonable to expect, or .005 min. per foot.

It has been shown that, in the example being used, there will be 2.4 cycles per 100 bobbins of yarn wound, with 40.8 feet to be walked at the end of each cycle. Therefore:

$$2.4 \times 40.8 \times .005 = \text{.49 min. walking time per 100 bobbins wound.}$$

The foregoing method of computing walking time should be used where the spindle assignment is such that the spindles are *not* all on one side of a machine; that is, the actual distance walked at the end of each cycle should be used. Where this distance is different for each operator, an average figure can be used.

A method for computing walking time, used by the author for several years, is much simpler and eliminates the need for first estimating, by "rule of thumb," the number of spindles an operator will tend.

This method assumes that all the operator's spindles will be on one side of a machine; in other words, she will walk the full length of her assignment at the end of each cycle, which would be the maximum distance to be walked under any assignment.

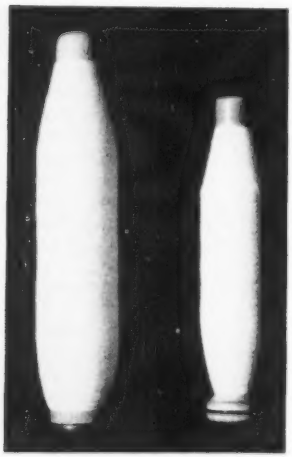
At the walking speed of 200 ft. per minute, or .005 min. per foot, the time to walk the distance between spindles (10") is .0041 min. If the number of spindles *serviced* (100 plus end breakage) is multiplied by .0041, the result will be the walking time per 100 bobbins wound.

In the example used:

$$120 \times .0041 = \text{.49 min. walking time per 100 bobbins wound.}$$

This short-cut method is accurate when the operator walks the entire length of her assignment at the end of each cycle, regardless of the spindle assignment, the running time of the bobbin, or the end breakage (end

**WINDING COSTS** of small bobbin will be about twice that of large bobbin.



breakage is included in the number of spindles serviced per 100 bobbins). For assignments where the operator walks a shorter distance, the figure obtained will be a little high, but it will be on the conservative side.

**Methods of Payment.** There are several methods of paying winder tenders by piece rate; among them, it is probable that the two most widely used are:

1. Rate per 100 pounds of yarn wound.

2. Rate per box of yarn wound, the box usually being the doffer's box containing the bobbins from one side of a spinning frame.

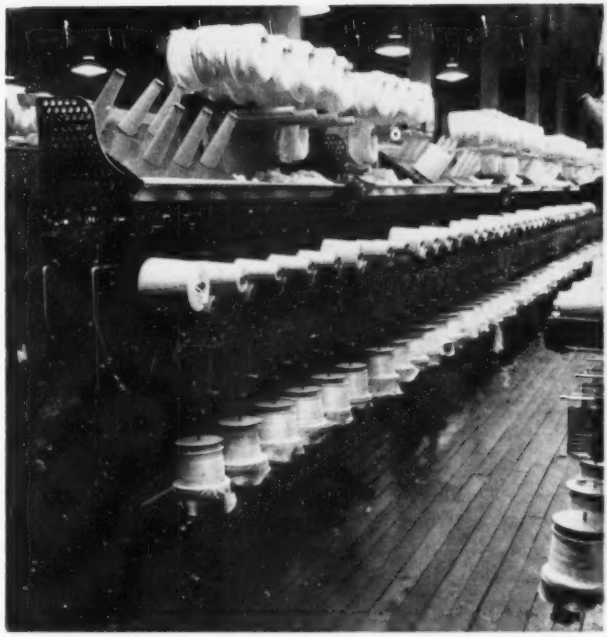
In our opinion, the method of paying by the box of yarn is the most equitable and convenient where it can be used. It has been shown that for a given range of yarns, all spun on the same size rings with the same net weight per bobbin, the winding cost will be approximately the same for the different counts, whether figured on a pound basis or a bobbin basis. Spinning frames are usually doffed with one side of the frame in one doffer's box, say 126 bobbins of yarn. Consequently, a piece rate can be established *per box of yarn*, which rate will be the same for the different counts, with the number of winding spindles per operator varying with the count of yarn, or the number of yards per bobbin.

The method of paying by the box of yarn seems to have several advantages over other methods:

1. The keeping of each operator's production record is simplified, as each girl has an individual card which is mounted at the end of her job and on which is punched the number of boxes of yarn which have been poured into her troughs, or shelves, each day.

2. It is less difficult to estimate the amount of yarn left on each girl's job at shift-changing time. For instance, if an operator has an estimated 3 boxes left, this is deducted from her column for that day and added in at the top of the column of the girl's card on the next shift. This is more convenient and probably more accurate than estimating the amount of yarn left on the winding spindles, which is usually done where payment is made at a given rate per 100 pounds.

3. If some change is made on the spinning frames to get more yarn per bobbin, there is no necessity of changing the piece rate, since none of the elements has been changed, and the work of the operator has not been increased. The number of spindles per operator should be increased to conform to the new bobbin, but the rate will not have to be changed. Therefore, the winding cost per pound will be reduced without the onus of "cutting wages."



**INSTALLATION OF PRECISION WINDERS** winding rayon cones from cakes.

For illustration of the foregoing, in the example given for calculating the piece rate, the result was 42.6 cents per box of 126 bobbins, 4.00 bobbins per pound of yarn, or 31.5 pounds net per box. The direct labor cost per pound is:

$$\frac{42.6 \text{ cents}}{31.5 \text{ lbs.}} = 1.35 \text{ cents per lb.}$$

Now suppose that some changes

Fig. 2

| ELEMENTS | | | (Random Method) |
|---|---|---|---|
| 1. 100 bobbins changed | X .14 min. | = | 14.00 mins. |
| 2. 60 breaks tied | X .10 min. | = | 6.00 mins. |
| 3. 8.3 packages changed | X .11 min. | = | .91 min. |
| Total time for 100 bobbins wound | | = | 20.91 mins. |

AVERAGE SERVICE TIME PER BOBBIN:

$$\frac{20.91 \text{ mins.}}{100 \text{ bbns.}} = .2091 \text{ min.}$$

| Diameter of Full Tube or Base Diameter of Full Cone | AVERAGE YARN TAKEUP SPEEDS IN YARDS PER MINUTE FOR THE FOLLOWING SPINDLE SPEEDS (For coning or ⅝" tubing) | | |
|---|---|---|---|
| | 900 r.p.m. | 1000 r.p.m. | 1200 r.p.m. |
| 6¼" | 285 | 317 | 380 |
| 6 | 275 | 306 | 367 |
| 5¾ | 266 | 295 | 354 |
| 5½ | 256 | 285 | 342 |
| 5¼ | 247 | 274 | 329 |
| 5 | 237 | 264 | 316 |
| 4¾ | 228 | 253 | 304 |
| 4½ | 218 | 243 | 291 |
| 4¼ | 209 | 232 | 279 |
| 4 | 199 | 222 | 266 |
| 3¾ | 190 | 211 | 254 |
| 3½ | 181 | 201 | 241 |
| 3¼ | 172 | 191 | 229 |
| 3 | 162 | 180 | 217 |
| 2¾ | 154 | 171 | 205 |
| 2½ | 145 | 161 | 193 |
| 2¼ | 136 | 151 | 181 |
| 2 | 127 | 141 | 169 |
| 1¾ | 119 | 132 | 158 |
| 1½ | 110 | 123 | 147 |

**Table A**

are made on the spinning frames, such as installing larger rings or using longer bobbins, with the result that the bobbins will contain 6 ounces of yarn, 2.67 bobbins per pound. As previously explained, there is no reason for increasing the piece rate per box, unless the end breakage increases, as the actual work done by the operators has not been increased. However, instead of getting 31.5 pounds wound, there will be 47.2 pounds wound for 42.6 cents. Therefore, the direct labor cost will be:

$$\frac{42.6 \text{ cents}}{47.2 \text{ lbs.}} = .902 \text{ cents per lb.}$$

There will therefore be a saving of .448 cent per pound, without increasing the effort of the winder tenders. Naturally, the assignment of spindles per operator will be increased, because of the longer bobbin.

The point may be raised that when the amount of yarn per bobbin is increased, the end breakage will also increase and thus increase the winding cost. It is true that the end breakage may increase slightly, but it will not go up in the same ratio as the increase in yardage. Experience has shown that, while there will be a slight increase in end breaks, it will not be enough to materially affect the winding cost.

4. Payment by the box is more equitable to the operator where, as sometimes happens, a spinning frame is doffed short and consequently the amount of yarn per bobbin is less than that on which the piece rate was fixed. Where the operator is paid by the hundred pounds, her earnings will be less because she has more work to do in winding a given weight of yarn.

On the other hand, if she is paid by the box, each containing a given number of bobbins, her work for the box of yarn has not changed and her earnings will not be affected.

Such short doffs will increase the cost per pound to the mill with this method of payment, but it should tend to keep supervision on its toes to prevent having these short doffs.

**Forms.** Of course, to make use of the different calculations involved, some kind of form is very desirable and is almost a necessity. The procedure illustrated in Form 1 is a summary of the calculations given for the cycle method of operation and has been found useful in a number of mills. The figures and data used conform to the example given.

**Average Experienced Operators.** Frequent mention has been made of the term "average experienced operator," and perhaps its meaning as used herein should be amplified, particularly for the benefit of those time-study engineers who are accustomed to the systems used by several recognized industrial engineering firms. Most such firms use the "unit," "point," or some other term to designate the unit of time measurement. Such a unit is one minute's work performed by a "normal operator," a normal operator performing 60 units per hour. A normal operator is therefore referred to as a 60-unit-hour operator, or a 60-point-hour operator.

While time-studying an operator, the engineer determines her "speed rate;" that is, he determines from experience the speed at which she is working as compared to a normal, or 60-unit-hour operator. If, for example, he determines that her speed is at the rate of a 70-unit-hour operator, he increases the element times obtained to those of a "normal" operator by taking seven-sixths of each element time.

The term "average experienced operator," as used in these articles, corresponds to approximately a 70- or 72-unit-hour operator. Experience has shown that, in those mills using the unit or point system, the average experienced winder tender will be about a 70- to 72-unit-hour operator.

**The Random Method.** As has been stated, the random method of operating spindles is the one used where the end breakage is very high and the operator does not work in cycles but services each spindle as it becomes inoperative. Although the labor cost of winding is usually higher under this method, it is sometimes necessary to use it in order to increase the machine efficiency of the winders.

In cases of limited floor space available, there is no alternative but to get a certain efficiency out of the maximum number of machines that can be installed in the space on hand.

It is more difficult to estimate accurately the production per operator under the random method,

because the times used for the different elements depend largely upon the distance which the operator has to walk in servicing each spindle. In some cases she will have to move only the distance of one or two spindles, whereas sometimes she may have to walk half the length of the machine to get to an inoperative spindle. However, if enough time studies are made under enough different conditions, figures can be obtained which will be fairly accurate. By checking the figures obtained against actual production records in a number of instances, the accuracy can be verified.

In the example to be given, the unit times for the elements are for average experienced operators, and while there may be instances where they may not be sufficiently accurate, it is thought that they can be safely used in the average mill to predetermine the production per operator and the number of spindles she should tend to get that production.

The elements involved are exactly the same as under the cycle method, but the element times are higher, because of the extra distance to be walked between spindles.

For Element 1 (Fig. 2) it has been found that an average experienced operator can change bobbins at a rate of .14 min. per bobbin on counts from about 10s to 30s, where she services the spindles at random.

For Element 2, the same operator can tie breaks in .10 min. per break.

For Element 3, the time to change a package is .25 min., but of this time, .14 min. is included in the bobbin-changing element, since the package is usually changed at the emptying of a bobbin. This leaves .11 min. to add in for changing the package, the same as was used under the cycle method. This is assuming, of course, that the packages are doffed and the spindles re-started immediately, without waiting for all the spindles to fill up. Where the packages are doffed in sets the element time for doffing is figured differently, as will be illustrated in an example under that method.

Again basing the calculations on a unit of 100 bobbins, a summary of the elements involved, assuming 60 per cent end breakage and 12 bobbins per package, is given in Fig. 2.

Since the total time for winding 100 bobbins of yarn is 20.91 minutes, the total time per bobbin is .2091 min.

Therefore, allowing 15% for cleaning and fatigue, to obtain the production per operator per hour:

$$\frac{60 \text{ mins.} \times 85\%}{.2091 \text{ min. per bbn.}} = 244 \text{ bobbins per hour}$$

$$\frac{244 \text{ bbns.}}{4.0 \text{ Bbns. per Lb.}} = 61.0 \text{ lbs. per operator. per hour.}$$

The above calculations are the same as used under the cycle method, except for the differences in the element times and the omission of walking time, which is included in the element times. However, in coming to the calculation of the number of spindles the operator should tend to get the production estimated, we depart entirely from the cycle method.

For the illustration, we shall use the same yarn data as were used under the cycle method; namely, 16s/1 yarn, 4.0 bobbins per pound (3,360 yards per bobbin), 3 lbs. per package, 550 ypm. winding speed, *but with end breakage of 60 per cent.* The illustration is given in Fig. 3.

Now, to obtain the number of spindles an operator should tend, we divide the total time per bobbin (7.119 mins.) by the average service time *per bobbin*, which, under the random method of servicing the spindles, is considered the average service time *per spindle:*

$$\frac{\text{Total Time per Bbn. } 7.119 \text{ Mins.}}{\text{Av. Service Time per Bbn. } .2091 \text{ Min.}} = 34 \text{ Spdls. per Operator.}$$

DRUM WINDING ANALYSIS
(Servicing spindles in Cycles and Doffing Packages Individually When Full)

Yarn Number. . . . . 16/1 — Yarn Speed. . . . . 550 YPM
Bobbins per Pound. . 4.0 — Bobbin Runs . . . . . 6.11 Mins.(A)
Yards per Bobbin . . 3360 — Spindle stops turning in .30 Min.
Pounds per Cone . . 3 — Total Time Per Cycle. . . 6.41 Mins.(F)
Bobbins per Cone . . 12 — Estimated End Breakage. . 20 %

(1) 100 bobbins changed x .12 Min. = 12.00 Mins.
20 breaks tied x .08 " = 1.60 "
8.3 Cones changed x .11 " = .91 "
Allowance for Walking Time = .49 "
Total for 100 bobbins changed and 120 (E) spindles serviced = 15.00 Mins.(B)
AVERAGE SERVICE TIME PER BOBBIN = 15.00 Mins.(B) / 100 Bbns. = .15 Min.(C)

(2) SPINDLES PER OPERATOR:
Average Service Time per Spindle = 15.00 Mins.(B) / 120 Spdls.(E) = .125 Min.(D)
Spindles per Operator = 6.41 Mins.(F) / .125 Min. (D) = 51.3 Spindles (Use 50)

(3) BOBBINS PER OPERATOR PER HOUR:
Allowance for Cleaning & Misc. 5 %
Fatigue . . . . . 10 %
Total Allowance . . 15 %
60 Mins. x 85 % / .15 Min.(C) = 340 Bobbins per Operator per Hour

(4) POUNDS PER OPERATOR PER HOUR:
340 Bbns./Operator/Hour / 4.0 Bbns./Pound = 85 Pounds/Operator/Hour

(5) PIECE RATE PER Box :
100 ¢ per Hr. x 1.15 x 126 Bbns. per Box / 340 Bbns. per Operator per Hour = 42.6 ¢ per Box

(6) MACHINE EFFICIENCY:
340 Bbns./Operator/Hour x 6.11 Mins.(A) / 50 Spindles x 60 Mins. per Hour = 69.3 % Efficiency

Date _____ By JMS

**FORM 1**

WINDING ANALYSIS
(Servicing Spindles and Doffing Packages at Random)

Yarn Number . . . . . 16/1 — Yards per Bobbin . . . 3360
Bobbins per Pound . . 4.0 — Yarn Speed . . . . . 550 YPM
Bobbins per Cone . . 12 — Bobbin Runs . . . . . 6.4 Mins.(A)
Pounds per Cone . . 3.0 — Estimated End Breakage . . 60 %

(1) 100 bobbins changed x .14 Min. = 14.00 Mins.
60 breaks tied x .10 " = 6.00 "
Cones changed x .11 " = .91 "
Total for 100 bobbins wound . . . = 20.91 Mins.(B)

AVERAGE SERVICE TIME PER BOBBIN = 20.91 Mins.(B) / 100 Bbns. = .2091 Min.(C)

(2) SPINDLES PER OPERATOR:

Running time per bobbin (A) . . . . . = 6.110 Min./Bbn.
Idle time per bobbin:
Change bobbin (.5 Min. + .14 Min.). . . . . = .640 " "
Retie break (.5 " + .10 " ). x 60 % = .360 " "
Change pkge. ( .11 Min./change / 12 Bbns. per Package) . . . . . = .009 " "
Total Time per Bobbin = 7.119 Mins.(D)

Total time 7.119 Mins.(D) / Service time .2091 Min. (C) = 34 Spindles per Operator

(3) BOBBINS PER OPERATOR PER HOUR:

Allowance for cleaning & misc. . . 5 %
Fatigue . . . . . 10 %
Total Allowance 15 %

60 Mins. x 85 % / .2091 Min.(C) = 244 Bobbins per Operator per Hour

(4) POUNDS PER OPERATOR PER HOUR:

244 Bbns. /Operator/Hour / 4.0 Bbns./Pound = 61 Pounds per Operator per Hour

(5) PIECE RATE PER Box :

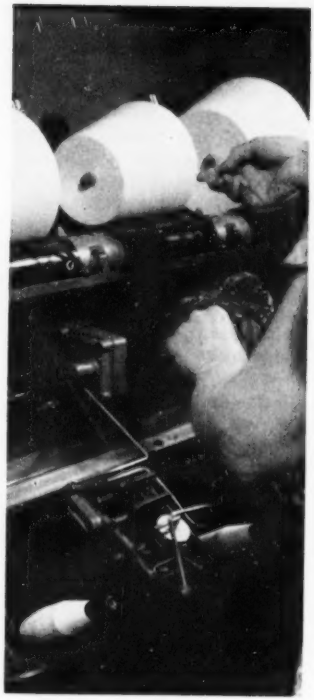
100 ¢ per Hr. x 1.15 x 126 Bbns. per Box / 244 Bbns. per Operator per Hour = 58.4 ¢ per Box

(6) MACHINE EFFICIENCY:

244 Bbns./Operator/Hour x 6.11 Mins.(A) / 34 Spindles x 60 Mins. per Hour = 73.1 % Efficiency

Date _____ By JMS

**FORM 2**



**OPERATOR STARTING** drum winder.

The illustration shown as Form 2 is offered as a condensation of the calculations given.

**Doffing Packages in Sets.** Under the method of doffing packages in sets, the winder tender attempts to keep the broken ends tied up so that the bobbins will run out in sets. No attempt to work in cycles is made. The operator pays particular attention to broken ends, tying them up before changing empty bobbins, so that all the spindles on her assignment will fill up as nearly as possible together. The reason for this was mentioned previously.

Since the full packages are to be doffed in sets, it is obvious that the element time for doffing should not be included in figuring the number of spindles per operator, since the doffing is almost an entirely different operation. The operator pays no attention to the diameters of the packages until they are approaching full size. When the first package reaches

**Fig. 3**

Running time per bobbin, $\frac{3360 \text{ yds.}}{550 \text{ ypm}}$ = 6.110 mins. per bobbin

Idle time per bobbin:

| | | |
|---|---|---|
| *Change bobbin, .5 min. + .14 min. | = | .640 min. per bobbin |
| **Retie breaks, (.5 min. + .10 min.) x 60% | = | .360 min. per bobbin |
| ***Change package, .11 min. ÷ 12 bbns. per pkge. | = | .009 min. per bobbin |
| TOTAL TIME PER BOBBIN (Except cleaning & fatigue) | = | 7.119 minutes |

*An allowance of .5 min. is made for each time the spindle is serviced, which includes the time required for the spindle to stop turning.

**In this instance, we have the .5 min. allowance plus .10 min. for tying up the broken end, giving .60 min *per break*. To convert this to a *per bobbin* basis, it is necessary to multiply by the percentage of end breakage to obtain the idle time of the spindle *per bobbin*.

***Obviously, this is the conversion of the package changing time to a *per bobbin* basis, remembering that a full bobbin is changed as part of the operation, with that time included under "Change bobbin."

the desired diameter, she doffs that spindle and lets it remain idle until all other spindles are doffed. This is done for each succeeding spindle, so that there will be a period of several minutes when she will be actually tending only a very few spindles, the others being idle until the last spindle is doffed. This means a loss in efficiency, but that is the penalty which is inherent with this method of operation.

In view of the detailed explanations which preceded the previous examples, it is felt that Form 3, covering the method of tending the spindles at random and doffing in sets, will need little clarification. However, there are a few points which may need clearing up.

In explanation of the use of 80 per cent in Section 2 of Form 3, experience has shown that where the operator is working continuously at changing bobbins and tying breaks she can keep all her spindles operating about 80 per cent of the time. Therefore, by dividing the running time of the bobbin (6.11 mins.) by .80, we get the total spindle time per bobbin (7.64 mins.) while she is working, and this will also be the total time per set of bobbins, since she keeps the breaks tied up so as to have the bobbins run out in sets. The calculation to determine the number of spindles per operator is self-explanatory.

In figuring the number of bobbins per operator per hour, Section 3 of Form 3, we use an entirely different method from any previously given. The element times given here could be figured down to a bobbin basis, which would permit using the form illustrated for tending the spindles at random and doffing the individual full packages as they reach full size. However, it seems simpler to make the allowances for gauging and doffing the packages as a separate item, since this element is almost a separate and distinct operation. The same will hold true for cleaning, since the spindles are always cleaned between doffs.

As for the time used in the example for gauging and doffing (12.2 mins.), here again we must fall back on experience, which has shown that this time will be about twice the running time of the bobbin. Actually the total elapsed time between the doffing of the first and last spindle on an operator's job will be about three times the running time of the bobbin, but during that time she will have tied in one set of bobbins, and this set is included in the total number of bobbins per set of packages. Therefore, for the *extra* time required for the filling up of the packages, we use twice the bobbin running time.

DRUM WINDING ANALYSIS
(Working at Random; Doffing in Sets of Packages)

| | | | |
|---|---|---|---|
| Yarn Count | 16/1 | Yarn Speed, ypm | 550 |
| Bobbins per Pound | 4.0 | Bobbin Runs, Mins. | 6.11 (A) |
| Yards per Bobbin | 3360 | Bobbins per Cone | 12 |
| Est. End Breakage | 60% | Pounds per " | 3 |

(1) 100 bobbins changed x .14 min. = 14.00 mins.
60 breaks tied x .10 " = 6.00 "
Total for 100 Bobbins = 20.00 mins. (B)

AVERAGE SERVICE TIME PER BOBBIN = $\frac{20.00 \text{ mins. (B)}}{100}$ = .20 min.(C)

(2) SPINDLES PER OPERATOR:

$\frac{6.11 \text{ mins.(A)}}{.80}$ = 7.64 Mins.(E), Average time to wind one set of bobbins. No allowance for cleaning fatigue, etc.

$\frac{7.64 \text{ mins. (E)}}{.20 \text{ min. (C)}}$ = 38 Spindles per Operator

(3) BOBBINS PER OPERATOR PER HOUR:

7.64 mins.(E) x 12 bbns. per Cone = 91.6 mins.
Allowance for gauging and doffing = 12.2 "
Allowance for cleaning = 5.0 "
90% of Total Time = 108.8 "

(Allow 10% of Total Time for Fatigue)
Total Time per Set of Cones = $\frac{108.8 \text{ mins.}}{.90}$ = 121 mins.(F)

$\frac{38 \text{ Spdls. x } 12 \text{ Bbns. per Cone x } 60 \text{ mins.}}{121 \text{ mins.(F) per Set of Cones}}$ = 226 Bobbins per Operator per Hour

(4) POUNDS PER OPERATOR PER HOUR:

$\frac{226 \text{ Bbns./Operator/Hour}}{4.0 \text{ Bbns./Pound}}$ = 56.5 Pounds

(5) PIECE RATE PER Box :

$\frac{100 \text{ per Hr. x } 1.15 \text{ x } 126 \text{ bbns. per Box}}{226 \text{ Bbns/Operator/Hour}}$ = 64.6 per Box

(6) MACHINE EFFICIENCY:

$\frac{226 \text{ Bbns./Operator/Hour x } 6.11 \text{ mins.(A)}}{38 \text{ Spindles x } 60 \text{ mins./Hour}}$ = 60.6 %

Date _____ By _____

**FORM 3**

**Precision Winders**. As stated at the beginning of this article, the precision winder is entirely different in principle from the drum winder. It is used to wind cones or tubes of high density, permitting more yarn to be shipped in a given size case or bale. This type of winder is generally used for winding ply yarns, although single warp yarns are also wound on precision type machines. Single knitting yarns are seldom wound on precision packages, because a low-density cone is more desirable from the standpoint of the knitter.

Since the precision machine operates at a constant *spindle* speed, the yarn speed is not constant but increases as the package increases in diameter. Therefore, it is not practicable for the operator to work in cycles. The yarn speed is changing all the time on each spindle, so that it is not possible to have the bobbins run out consecutively. Also, it is not practicable to doff the full packages in sets, for the same reasons.

It can readily be seen that the

PRECISION WINDING ANALYSIS

Type of Machine Universal No. 30 Package Dimensions 6" trav. 15" diam.

Yarn Number 10/7 Yarn Speed (1,200 rpm) 316 Ave. YPM.
Bobbins per Pound 1.78 Bobbin Runs, Ave. Mins 347 (A)
Yards per Bobbin 2520 Bobbins per Tube 4 to 6
Est. End Breakage 5 % Pounds per — 2.0

(1) 100 bobbins changed x 20 Mins. = 20.00 Mins.
15 breaks tied x .15 " = 2.25 "
5.25 Tubes changed x .40 " = 2.10 "
Total for 100 bobbins = 25.25 Mins.(B)

AVERAGE SERVICE TIME PER BOBBIN = 25.25 Mins.(B) / 100 = .2525 Min.(C)

(2) SPINDLES PER OPERATOR:

Running time per bobbin (A) = 3.47 Min. per Bbn.
Idle time per bobbin:
Changing bobbin (.5 + .20 Min.) = .70 " " "
Tie breaks (.5 + .14 Min.) x .15 % = .03 " " "
Change package (.20 Min. / 2.47 Bbns. per package) = .08 " " "
Total Time per Bobbin = 4.24 Mins.

Total Time 4.24 Mins. / Service Time .2525 Mins.(C) = 16.8 Spindles per Operator (Use 36 = 6 gangs)

(3) BOBBINS PER OPERATOR PER HOUR:

Allowance for cleaning & misc. 5 %
Fatigue 10 %
Total Allowance 15 %

60 mins. x 85 % / .2525 mins. (C) = 202 Bobbins

(4) POUNDS PER OPERATOR PER HOUR:

202 Bbns. per Operator per Hour / 1.78 Bbns. per Pound = 113.5 Pounds

(5) PIECE RATE PER 30x:

100 % per Hr. x 1.15 x 64 Bbns. per 80x / 202 Bbns. per Operator per Hour = 36.48 ¢ per 30x

(6) MACHINE EFFICIENCY:

202 Bbns. per Op. per Hr. x 3.47 Mins.(A) / 36 Spindles x 60 Mins. per Hour = 69.8 %

Date _____ By _____

**FORM 4**

bobbins will be emptied at random over the operator's assignment of spindles, which means that the operator has to service each spindle as it becomes empty.

While the yarn speed is not constant, the average speed in yards per minute can easily be calculated from the spindle speed in revolutions per minute and the average diameter of the package. There is no need of going into the calculations for determining the average speed, because charts and tables can be obtained from the machinery manufacturers which will give the average yarn speed for different diameters, as illustrated by Table A [page 146], representing a part of a table available from the Universal Winding Company.

However, perhaps a word of caution will be in order. Since the average yarn speed naturally varies as the outside diameter of the package varies, it is necessary to use the average yarn speed for *each* outside-diameter package being wound. For example, in winding a 5-inch outside-diameter tube at a spindle speed of 1,200 rpm. the average yarn speed will be 316 yards per minute, this being the average of the speeds at the beginning of the tube and at the finish. If the outside diameter is increased to six inches, it is obvious that the average yarn speed will be higher (367 yards per minute). Therefore, with the spindle speed being unchanged, it is necessary to change the assignment of spindles per operator to conform to the average yarn speed of the package, which in turn is determined by the outside diameter being wound.

The elements in the operation of precision winders are exactly the same as for drum winders. However, the element times are higher, because it takes more time to service a spindle on a precision-type machine. The reason is that modern drum winders are fitted with self-threading or partially self-threading tensions and guides. On precision winders the tensions and guides have to be threaded by hand, requiring more time.

Since the yarn speed is not constant, the method of servicing the spindles in cycles is precluded. Also, since it is not practical to have the packages fill up in sets, the method used on drum winders for winding in sets of packages cannot be used. However, the method and form used for operating drum winders at random and doffing individual packages can be used to good advantage.

The example shown as Form 4 is submitted to illustrate the method of calculating the production per operator on precision winders and the number of spindles she should tend to turn off that production.

In Section 1 of Form 4, it will be observed that the element times are higher than those used for drum winding. As was explained, this is because it takes more time to service a spindle on a precision winder. However, contrary to the case of drum winding, the same element times are not applicable to all yarns wound on precision winders. These times will vary according to whether the knots are tied by hand or with hand knotters, and the element time for changing packages will vary as to whether the packages are gauged by hand or by an automatic attachment on the winder spindle. Consequently, no attempt should be made to use the element times given in the example on precision winding for all types of yarns and packages, nor for all types of precision winders. The only solution is for time studies to be made in the individual mill to determine the element times to be used for the conditions prevailing in that mill. With the element times determined, the form given can be safely used for almost all problems on precision winders.

*FOR REPRINTS of this article, please write to the editors. No charge.*

**New Officers and Directors.** Left to right: Matt L. Thompson, Thompson Hosiery Mills, director; Taylor R. Durham, president and secretary; W. W. Couch, Jr., Durham Hosiery Mills, chairman of the board; C. W. Gordon, Standard Hosiery Mills, Inc., vice-president and chairman of full-fashioned division; R. P. Shapard, Jr., Spalding Knitting Mills, vice-president and chairman seamless division.

# Cost Conscious Hosiery Men

## *hold their annual meeting at Roanoke*

*Staff Report*

MEMBERS of the Southern Hosiery Manufacturers Association met in Roanoke, Virginia, September 4th and 5th, for their 19th Annual Convention. Speakers and audience indicated a general cost consciousness and a realization of the importance of applying cost data if there is to be financial stability in the hosiery industry.

Taylor Durham, secretary of the association, told the membership that "inventories equal to shipments of forty-five days or less are now adequate" for manufacturers of full-fashioned hose. Sixty days' shipments were considered normal in the past, but because of process simplification and improved equipment, inventories can be reduced safely.

Mr. Durham listed as one of the causes of the decline in prices of full-fashioned hosiery the practice of some of the mills to run on full production schedules rather than curtail operations when sales are off.

**Productive Capacity Decreased.** While the number of seamless machines in southern mills increased from 60,000 after the war to 70,000 in 1950, the trend is now downward. Productive capacity of both full-fashioned and seamless has been reduced through scrapping and exporting of old machinery. The association feels that this decreased capacity is healthy and will assure eventual stability in the industry.

**Manual on Costs.** The association's Economic Study Committee is considering the publication of a manual on costs of operation to be distributed to the entire membership. It is thought that many of the industry's price problems have arisen from sales made at a loss. It is hoped the activities of the committee will illustrate the importance of making no sale without a profit.

**Cost Data Not Used by Mills.** Mark Jay King, Jr., Nicol & King, Southern Pines, N. C., an industrial consultant, said that many hosiery mills are not making use of cost data even when they have it on hand. They frequently indicated that they thought it was fine information, but filed it away in a "Ho Hum Department." When you know you are making money on one item and losing it on another, sell with that information in mind. Turn down the loss items and let another mill go broke on that business, he said.

**Use Industrial Engineering Principles.** E. G. Micheals, of Henderson, Lindsay & Micheals, Greensboro, N. C., also an industrial consultant, told the group that another way to increase profits is to use industrial engineering techniques to simplify work methods and thereby reduce production costs. He showed a film which demonstrated a number of methods used in operations in the textile industry. After each old method was illustrated, it was followed by a new method which simplified the procedure and cut production costs.

Julius M. Ramsay, Jr., Waldensian Hosiery Mills, Lenoir, N. C., talked to the association on the subject of incentives. He said the modern concept of incentives is to find ways to induce the operator to produce the best he can—willingly. A competent operator, Mr. Ramsay stated, must not be penalized by a 100% loss in earnings for a loss in production which is beyond his control. He should be compensated in part by an impartial allowance plan when such conditions arise.

Since installing an incentive plan at Waldensian, employees have increased earnings by 33%, but productivity per man-hour has increased 42%. The plan was installed in the spring of 1948. Direct labor costs at this mill are the same today as when the plan was begun, and on some operations the cost is even lower. Also, there has been good employee morale, and less labor turnover.

Fixers, foremen, and superintendents are also under the incen-

(*Continued on page* 173)

*Staff Report*

The Third Canadian Textile Seminar was held at Kingston, Ontario, Canada, September 11-13. Sponsored by the Textile Technical Federation of Canada, the seminar was attended by mill men from the Dominion, the United States, and from foreign countries.

Speakers who are specialists in technical or management operations were chosen; following each address the meetings developed into open forums.

TEXTILE INDUSTRIES presents herewith abstracts of and extracts from a number of the papers delivered at the seminar, but length of the papers precludes publishing the addresses in full. All of the papers presented are available now in book form from The Secretary of the Federation, 1410 Guy Street, Montreal, P. Q. Canada; the 138-page publication is priced at $5.00.

# Third

## Finishing Fabrics Containing Wool and Other Fibers

By DR. C. S. WHEWELL
The Textile Institute

IN SCOURING, as would be expected, the amount of shrinkage varies with the composition of the cloth. In many cases the greater the percentage of wool in the cloth the greater is the shrinkage (see for example the figures given in Table II), but in others the reverse is true as shown in Table III which summarizes the results of measurements of shrinkage of several cloths woven on the same loom and then scoured together. The relaxation of the Fibro cloth during the scouring is greater than that of the wool cloth, possibly because of the greater deformation of the rayon yarns.

Strains inserted during weaving and yarn preparation are not removed so readily as in the case of those in the wool yarns and this gives rise to the greater shrinkage in scouring. It is clear then that a knowledge of the precise amount of scouring shrinkage is essential to the designer, and the need for pattern lengths produced under carefully controlled and accurately known conditions cannot be unduly stressed.

Since rayon and synthetic fibers do not felt, it might be expected that cloths made from wool blended with these fibers would shrink less than all-wool cloths. This is not, however, always the case, and the shrinkages and changes in appearance of blended cloths during milling are complex functions of composition, cloth and yarn structure, and conditions of milling.

Unless the percentage of rayon or nylon exceeds 30 per cent, most blended cloths will shrink considerably when milled, the exceptional cases being those cloths which have been very heavily set. Care must be taken to be sure that fiber migration is not serious. During the milling the wool fibers often tend to collect together in balls on the surface of the fabric, and consequently when the cloth is subsequently piece-dyed these balls of wool stand out prominently against the ground of the cloth.

The extent of this defect is connected with the structure of the cloth and the finishing style required, but heavy milling should not be carried out unless the structure of the cloth has been adjusted to minimize the possibility of "balling-up." Once "balling-up" has occurred the appearance of the cloth is irretrievably altered, although wet raising may convert a commercially useless fabric into one which is acceptable.

The extent and rate of shrinkage is determined by the conditions of milling and the composition and structure of the fabric. In

**TABLE II**

| Composition of fabric* | % shrinkage on scouring† |
|---|---|
| 100% wool; (64's) | 17.4 |
| 62.5% wool; 37.5% Fibro | 14.3 |
| 50% wool; 50% Fibro | 13.5 |
| 25% wool; 75% Fibro | 12.7 |
| 12.5% wool; 87.5% Fibro | 12.7 |
| 100% Fibro | 9.5 |
| 100% Rayolanda | 14.3 |
| 62.5% wool; 37.5% Rayolanda | 13.5 |
| 50% wool; 50% Rayolanda | 12.7 |
| 25% wool; 75% Rayolanda | 13.5 |
| 12.5% wool; 87.5% Rayolanda | 12.7 |

*Warp: 1"16's worsted counts; 8 t.p.i.; 58 ends per in.
Weft: 2/32's worsted counts; 63 picks per in.
Weave: 2/2 twill.
†Calculated as % of reed width.

# Canadian Textile Seminar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general, cloths made from wool blended with nylon, vinyon, or acetate shrink less than all-wool cloths (see Table IV) while blended cloths containing Fibrolane or Ardil and appreciable quantities of wool may shrink more than corresponding wool cloths.

Although the precise order is found to depend on the conditions under which the milling is carried out, non-wool fibers may be placed in order of their effectiveness in reducing milling shrinkage and may be classified into three groups:

(1) Those which are able to bring about considerable reduction in milling, e.g., acetate, vinyon, and nylon.

(2) Those which have comparatively little effect unless present in large amounts, e.g., Fibro and Rayolanda.

(3) Those which increase the shrinkage if not more than about 60 per cent is incorporated, e.g., protein rayons.

The fiber and fabric properties which determine the actual order are undoubtedly complex and are at present being studied in detail, but it is striking that fibers in the first group are not readily swollen while those in the third group swell very readily.

Since swelling affects both elastic and frictional properties of the fibers, it is possible that it will be an important factor in determining the behavior of the blended fabrics. Some evidence in support of this view is provided by the observation that the milling characteristics of acetate/wool blends are greatly improved by treatments which cause the acetate rayon to swell.

Several physical characteristics of the non-wool component of a blended cloth have also been considered in connection with milling shrinkage. Although wool staple length is known to affect the milling shrinkage, the length of the staple of the rayon component in a blend has little effect on the milling shrinkage, as shown by the figures given in Table VI.

The shrinkages of cloths containing 2-inch staple rayon are

**TABLE III**

| Composition of fabric* | % Area shrinkage on scouring |
|---|---|
| 100% wool (64's) | 9.3 |
| 75% wool; 25% Fibro | 14.0 |
| 50% wool; 50% Fibro | 14.9 |
| 25% wool; 75% Fibro | 16.7 |
| 100% Fibro (3 den. 4 inch) | 17.3 |

*Warp: 2/24's worsted counts; 48 ends per inch in loom.
Weft: 2/24's worsted counts; 46 picks per inch in loom.
Weave: 2/2 twill.

**TABLE IV**

**Milling shrinkage of blended fabrics.**

| Fabric No. | % and type of synthetic fibre in weft yarn. | % shrinkage after milling for: 30 min. | 60 min. | 90 min. | 120 min. | 150 min. | 180 min. |
|---|---|---|---|---|---|---|---|
| B1 | 0 (100% wool) | 5.4 | 19.4 | 28.0 | 32.3 | 35.5 | 39.8 |
| B2 | 20.8% vinyon | 5.3 | 14.7 | 21.0 | 26.3 | 31.6 | 34.7 |
| B3 | 40.2% vinyon | 3.1 | 10.4 | 16.8 | 20.8 | 25.0 | 29.2 |
| B4 | 60.6% vinyon | 3.1 | 10.3 | 13.4 | 17.5 | 20.6 | 23.7 |
| B5 | 80.0% vinyon | 3.0 | 8.1 | 11.1 | 13.1 | 15.1 | 17.2 |
| B1 | 0 (100% wool) | 5.4 | 19.4 | 28.0 | 32.3 | 35.3 | 39.8 |
| B6 | 19.8% nylon | 3.2 | 12.9 | 18.3 | 23.7 | 29.0 | 32.3 |
| B7 | 40.8% nylon | 1.1 | 7.5 | 12.9 | 18.3 | 22.6 | 26.9 |
| B8 | 60.0% nylon | 0 | 2.1 | 7.4 | 11.4 | 14.9 | 17.0 |
| B9 | 79.7% nylon | -1.1 | 1.1 | 3.2 | 5.3 | 5.3 | 7.4 |
| B1 | 0 (100% wool) | 5.4 | 19.4 | 28.0 | 32.3 | 35.5 | 39.8 |
| B10 | 21.2% Fibroceta | 4.3 | 14.0 | 18.3 | 24.7 | 29.0 | 33.4 |
| B11 | 40.7% Fibroceta | 2.2 | 8.6 | 11.8 | 16.1 | 1.5 | 23.7 |
| B12 | 59.9% Fibroceta | 0 | 3.3 | 7.6 | 11.9 | 14.1 | 17.4 |
| B13 | 80.0% Fibroceta | 1.1 | 1.1 | 3.2 | 5.4 | 6.5 | 7.6 |
| B1 | 0 (100% wool) | 5.4 | 19.4 | 28.0 | 32.3 | 35.5 | 39.8 |
| B14 | 20.3% Fibro | 5.5 | 16.5 | 25.1 | 29.7 | 35.1 | 37.2 |
| B15 | 39.5% Fibro | 4.5 | 14.6 | 21.2 | 27.0 | 31.5 | 34.8 |
| B16 | 60.2% Fibro | 5.5 | 14.4 | 20.0 | 25.6 | 31.1 | 34.5 |
| B17 | 79.7% Fibro | 2.3 | 10.2 | 15.9 | 20.5 | 25.0 | 28.4 |

only slightly different from those containing 6-inch staple rayon. This has an interesting commercial consequence, for yarns containing the longer staple rayon are considerably stronger than those containing the shorter material; and hence if a strong milled cloth is required it is advisable to use the longest staple fiber possible and this will apparently have no serious effect on the milling shrinkage.

Differences in the denier of the rayon component are of some importance, coarse denier rayon promoting shrinkage (see Table VII). The method of spinning and yarn preparation also affects the shrinkage and from the figures given in Table VIII it is evident that the shrinkages of identical cloths made from yarns spun on various systems are different.

**TABLE VI**

| % Wool in Fabric* | Shrinkage after milling for 1 hour — Woven fabric containing (in weft): | | | |
|---|---|---|---|---|
| | 2 in. Fibro | 6 in. Fibro | 2 in. Rayolanda | 6 in. Rayolanda |
| 100 | 32 | 33 | 32 | 33 |
| 75 | 29 | 32 | 33 | 37 |
| 50 | 26 | 29 | 33 | 37 |
| 25 | 21 | 22 | 30 | 33 |
| 12.5 | 17 | 16 | 25 | 28 |
| | Shrinkage after milling for 3 hours | | | |
| 100 | 56 | 60 | 56 | 60 |
| 75 | 56 | 58 | 58 | 59 |
| 50 | 52 | 56 | 54 | 59 |
| 25 | 46 | 45 | 52 | 51 |
| 12.5 | 36 | 37 | 45 | 45 |

*The fabrics used in this work had the following constructions.
Warp: 2/40's cotton; 23.5 tpi; 56 ends per in.; 32 in. reed width.
Weft: 56 picks per in. The yarns contained various proportions of wool mixed with Fibro or Rayolanda of 2-in. or 6-in. staple length; those containing the shorter fibers were processed on the Continental system and those containing the longer fibers on the English system. All the yarns were spun to 12 worsted cts. and had 7 tpi.
Weave: 2/2 twill.

**TABLE VII**

Effect of denier on milling shrinkage*

| Denier of Fibro | % milling shrinkage after milling for: | | | |
|---|---|---|---|---|
| | 30 min. | 60 min. | 90 min. | 120 min. |
| 1.5 | 7.8 | 16.8 | 21.2 | 28.9 |
| 3.0 | 8.3 | 19.5 | 22.8 | 28.2 |
| 4.5 | 11.1 | 20.9 | 25.3 | 31.9 |
| 8.0 | 9.8 | 20.6 | 27.2 | 33.7 |

*The fabric used in these trials contained 50% of wool and 50% of 2.5-in. Fibro.

**TABLE VIII**

Shrinkage of cloths made from yarns spun by various methods.

| System of Spinning | % shrinkage after milling for: | | | | |
|---|---|---|---|---|---|
| | 20 min. | 40 min. | 60 min. | 80 min. | 100 min. |
| Cotton | 14.2 | 36.2 | 46.1 | 51.6 | 52.7 |
| Cotton Condenser | 9.9 | 24.1 | 35.0 | 44.0 | 46.0 |
| Woollen | 10.0 | 22.2 | 33.4 | 42.2 | 44.5 |

NOTE: The fabrics used in these trials contained 50% of Fibro and 50% of wool.

# Research on Static Electricity

By G. W. GRAHAM
Canadian Industries Limited

IT APPEARS that the prevalent belief among textile men is that static is generated from interfiber friction. Mr. Garner, Dr. Michell and I carried out an experiment on a cotton card which may convince you that this is not the case. The card sliver was showing extreme electrification as it emerged from the condenser rolls of the card. An "Ionotron" was suspended over the web close to the doffer comb and, from the appearance of the web, this instrument had successfully eliminated the static in the web. The static must have been generated between the "Ionotron" and the point where the sliver emerged from the condenser rolls. Very little interfiber friction takes place between these points but the fiber is subjected to pressure from the metallic rolls and the static must arise from this contact with the metal of the rolls. It still could be argued that there was sufficient interfiber friction to account for the static but this argument was disposed of by rubbing the rolls with a small amount of antistatic agent. The static was completely eliminated. Since the agent could not penetrate the fibers but only formed a film between the sliver and the metal of the rolls, we were forced to conclude the static was generated at this point. This, of course, emphasizes the importance of metal to fiber contact when examining antistatic agents.

One can also draw a similar conclusion from the electrostatic series. Since orientation in a drawn nylon fiber is parallel to the fiber axis, the majority of interfiber contacts will be parallel

to this axis and a fairly uniform dielectric constant of the contacting faces will result.

**Major Conclusions.** The largest part of the electrification is due to contact between fiber and metal. The main function of an antistatic agent is to form an electrostatic shield between fiber and metal in order to reduce or eliminate the contact potential between them. Surface active agents are effective as antistatic agents because they are oriented on the surface of the fiber, thus forming a more effective electrostatic shield.

# Fiber Sorption of Surface Active Compounds

By A. S. WEATHERBURN
National Research Council

REGARDING the sorption of surface active compounds from aqueous solution by cotton, viscose rayon, acetate rayon, nylon, and wool fibers, cationic compounds were generally found to be sorbed to the greatest extent, and non-ionic compounds least.

The anionic compounds occupied an intermediate position with the soaps being sorbed somewhat more strongly than the synthetics. A considerable proportion of the sorption of the fatty acid component of the soaps, however, is attributable to the sorption of hydrolytic products, free fatty acid and/or acid soaps, and under conditions of suppressed hydrolysis the soaps were sorbed to approximately the same extent as the synthetic anionic compounds.

The addition of sodium sulphate to solutions of sodium alkyl sulphates resulted in an increase in the sorption of the latter compounds in every case. The sorption of non-ionic di-isobutyl cresolethylene oxide compounds was found to decrease slightly with increasing length of the polyethylene oxide chain over the range studied. Wide variations were found in the sorption capacities of the different fibers, and the arrangement of the fibers in order of increasing sorption varied with each type of surface active compound studied.

The Textile Laboratory of the National Research Council has been engaged for some time in a study of some of the more fundamental aspects of detergency. During the course of this work it became apparent that the sorption of detergent compounds by both the soil particles and the fabric is an important factor in the complex mechanism of textile detergency. Accordingly a considerable volume of data has been collected relating to the sorption of a variety of surface active compounds by carbon black, representing an important constituent of normal soil and by some of the more common textile fibers.

Considering the fibers, there is little uniformity with regard to their capacity for sorption of the various types of compound. Wool, for example, showed a high capacity for the sorption of anionic and cationic compounds, but did not sorb non-ionic compounds to any appreciable extent. Cotton, on the other hand, sorbed comparatively small amounts of anionic and cationic compounds, but sorbed more of the non-ionic compounds than did any of the other fibers. The explanation of this behavior is no doubt to be found in the physical and chemical characteristics of the various fibers, but a discussion of this complex subject is beyond the scope of this paper.

# Test Results on Carpet Rayon

By CHARLES H. WISHART
Brinton-Peterboro Carpet Co., Ltd.

TESTS have been made by the Ontario Research Foundation and, as wool has been the standard raw material used in the carpet industry for many years, the results of the tests made with rayon have been compared to the results obtained on the same tests made with wool.

Before the tests were carried out, the fabrics were conditioned at 65% R.H. and 70 F. The resilience was calculated from measurements of total carpet thickness made with a Compressometer under a "zero" pressure at 0.01 pounds per square inch. The resilience is expressed as a percentage calculated from the ratio of the thickness of the carpet after removing the load to the thickness of the original carpet before it was deformed. In all the experiments the pressure applied was three pounds per square inch.

This pressure was selected arbitrarily and it is approximately equivalent to that exerted by the average man weighing 150 pounds when standing on a carpet. Two experiments were carried out. In the first, the carpets were subject to a pressure of 3 pounds per square inch for five minutes. The

recovery was measured in 5 minutes and again 24 hours after removing the load. The second experiment was similar to the first and differed only in the fact that the carpets were subjected to the 3 pounds per square inch pressure for 24 hours. The summary of the results of these experiments is shown in the table below.

One conclusion which would seem to be suggested by the above figures is that when rayon is used in the pile of a carpet, the pile should be as close as possible and reasonably short. Such a construction would probably tend to offset any lack of resilience in the fiber itself.

| Indentification of Sample | Carpet under pressure for five minutes | | Carpet under pressure for twenty-four hours | |
|---|---|---|---|---|
| | Recovery after 5 Minutes | Recovery after 24 hours | Recovery after 5 Minutes | Recovery after 24 hours |
| Short Pile— | | | | |
| All Wool | 99% | 100% | 95% | 100% |
| All Rayon | 97% | 98% | 94% | 97% |
| Medium Pile | | | | |
| All Wool | 96% | 100% | 95% | 99% |
| All Rayon | 95% | 96% | 86% | 95% |

# Sewability of Fabrics Made of Staple Fiber

By FRED FORTESS and GEORGE C. WARD

Celanese Research Laboratories — Celanese Corp. of America

THE SEWABILITY of fabrics does not appear at first glance to be the concern of the textile dyehouse chemist. However the experience of the last two years in the Celanese Research Laboratory has revealed that improper or inadequate fabric finishing is largely responsible for the sewing difficulties to be discussed. The trend toward higher sewing speeds and the increased demands of styling with new fabric constructions and fiber blends are likely to produce defects which cannot be overcome simply by altering mechanical details of needle and thread size.

The type of defects to be discussed mainly concern themselves with yarn cutting and fusion of the yarn about the needle hole.

## Needle Cutting of Yarns

The research laboratory was brought into this problem two years ago when we observed that a panel of heavy acetate lining satin sewn into an expensive overcoat could be lifted out without tearing a stitch. Close examination revealed that the supporting yarn in the fabric had been cut by the passage of the needle and thread through the fabric. This defective fabric apparently came from a single bolt of navy blue fabric since other colors including navy blue from other bolts were sewing satisfactorily.

With the assistance of the Singer Seam Research Laboratory and the purchase of a high speed Singer 241-11 sewing machine, factors influencing the cutting of yarns were investigated. The Singer Cut Yarn Test was used throughout our work and consists of:

A three ply strip of fabric about 3″ wide and 12″ long is sewed down the middle with a single stitching with the machine running at a speed of 4200-4500 stitches per minute. This can be done both warp and filling-wise if the fabric construction merits it. Two incisions are made exactly 3″ apart extending into the plied fabric just through the seam. The sewing thread is carefully removed and the two outer layers of fabric cut away.

A cut is made across the middle remaining layer of fabric about ½ inch away from the seam, and the yarn running parallel to the stitching is teased out of the fabric. By means of a low powered microscope the number of ends in 3″ cut by the sewing are counted.

All of the data recorded here was obtained with the use of an 88 x 9 No. 16 chrome finish needle at 16 stitches per inch. Where thread was used it was American Thread's 70/3 cord, soft finish cotton.

In Table I the cut yarn test data are recorded on satin samples taken from the customer's sewing room and from the dyer and finisher.

The fact that ten samples of navy blue from the dyer and finisher produced no cut yarns and only the navy blue at the customer did, suggested that possibly ageing or over-drying was involved. (*Continued on page* 161)

**TABLE I**

**Cut Yarn Test on Customer and Dyer's Samples**

| Sample Identification | Cut Ends/3″ |
|---|---|
| Customer Navy Blue from Overcoat | 81 |
| Customer Navy Blue from Bolt | 3 and 12 |
| Customer Navy Blue from Bolt | 5 and 15 |
| Customer Brown from Bolt | 0 |
| Customer Brown from Bolt | 0 |
| Customer Grey from Bolt | 0 |
| Customer Grey from Bolt | 0 |
| Dyer and Finisher Navy Blue from 10 Different Bolts | average of 0 |

Table II reveals the effect of continuous drying with the fabric sewn immediately on removal from the oven.

The fact that this fabric, even after 55 hours at 110 C, still gave a low level of yarn cutting suggested that some factor other than ageing or over-drying was involved. The factor of finish is described in Table III.

Removal of finish was thus revealed as major factor in producing cut yarn on sewing. In Table IV data are presented which indicate that the relubrication of extracted fabric as well as the faulty fabric obtained from the customers' mills completely corrects the cutting defect.

The original defective fabric produced 81 cut ends/3" compared with only 5 for the same fabric but refinished. Relubrication or even removal of the thread did not appreciably reduce the cutting on extracted fabric. Wiping softener or lubricant on the fabric in the path of the sewing appreciably reduces the cutting of yarn.

This data clearly establishes the finish as the primary factor in yarn cutting.

This is further illustrated on taffeta fabrics which are finished to a dry, crisp rustle with a minimum of lubricant or softener. The yarn cutting went from 0-5 to 50-75 cut ends/3" in a comparison of normally finished taffeta with one specially finished for more scroop.

### Needle Hole Fusion

When seams are sewn on four plys of medium weight suitings with the high speed machine, white incrustations are often noted around the holes of the stitch. This disfiguration is referred to as needle hole fusion.

With the experience obtained in the yarn cutting we immediately went to the finish as the possible source of this difficulty.

The sewing equipment used for this purpose is similar to that described for yarn cutting. The test consists of folding into 4 layers lengthwise a strip of fabric 6 to 8 inches wide and 18 to 20 inches long. Using 16 stitches per inch a single line of sewing is made at the full speed, 4200-4500 across the full length of the fabric. The seam is marked at 12" and 15" from the start of the sewing and the number of holes having the fused incrustation are counted for the 3" length.

A low power binocular microscope is sufficient for detecting this defect on the top surface of the test sample. Table V illustrates the range of fused holes on commercial fabric samples with 48/3" representing the maximum.

The data for the factor of humidity contained in Table VI indicate that the rate of fusion increases with higher % RH.

The removal of the lubricant or softener by petroleum ether raised those pieces recorded in Table V as zero to 44, 48, and 48 fused needle holes.

Since the commercially finished Green Island fabric gave consistently high values it was used to study the effect of various finishing softeners. The data for these applied at various levels are recorded in Table VII.

Finishes No. 1 and No. 2 are typical materials which are used because they impart a full bodied hand to the fabric. Finish No. 3 imparts a soft, pliant hand to the fabric. Therefore, the problem of

**TABLE II**

**Effect of Continuous Drying on the Cutting of Yarn During Sewing**

| Sample | Cut Ends/3" |
|---|---|
| Original Satin Sample | 0 |
| After ½ Hour at 110 C | 1 |
| After 1½ Hours at 110 C | 0 |
| After 24 Hours at 110 C | 2 |
| After 55 Hours at 110 C | 5 |
| After 120 Hours at 110 C (fabric boardy) | 25 |
| After 168 Hours at 110 C (fabric boardy) | 51 |
| After 216 Hours at 110 C (fabric boardy) | 68 |

**TABLE III**

**Effect of Finish on Yarn Cutting**

| | Treatment | Cut Ends/3" |
|---|---|---|
| Dyer's Satin Navy Blue | Fabric as received | 0 |
| " " " " | Fabric as received | 0 |
| " " " " | Ethyl ether extracted | 92 |
| " " " " | Petroleum ether extracted | 83 |
| " " " " | .5% soap scour 30 min., 50 C | 5 |
| " " " " | Ethyl ether extracted, sewn without thread—needle only | 55 |

**TABLE IV**

**Effect of Refinishing**

| Sample | Treatment | Cut Ends/3" |
|---|---|---|
| Dyer's Navy Blue Satin | As received | 0 |
| " " " " | Ethyl ether extracted | 92 |
| " " " " | Ether extracted + .5% mineral oil | 7 |
| " " " " | Ether extracted + .5% Softener #1 | 19 |
| " " " " | Ether extracted + .5% Softener #2 | 5 |
| Customer's Navy Blue from Overcoat | As received | 81 |
| " " " | Refinished | 5 |

**TABLE V**

**Needle Holes Fused on Commercial Suiting at 75 F and 65% RH**

| Identification | Number Fused Needle Holes |
|---|---|
| 83 Black | 0 |
| 650 Indigo | 0 |
| 1296 Lilac | 0 |
| 906 S. Navy | 15 |
| 1111 Green Fruit | 18 |
| 302 S. Navy | 23 |
| 1287 Mustard | 32 |
| 45 M. Rose | 40 |
| Green Island | 48 |

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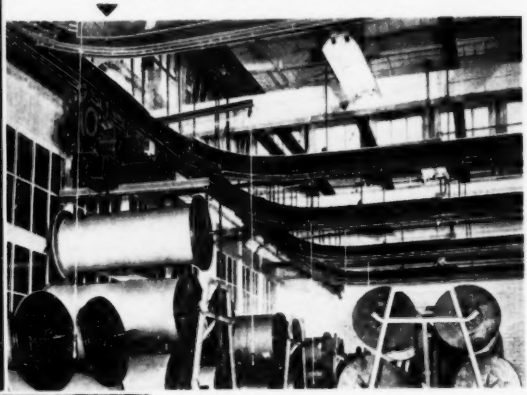

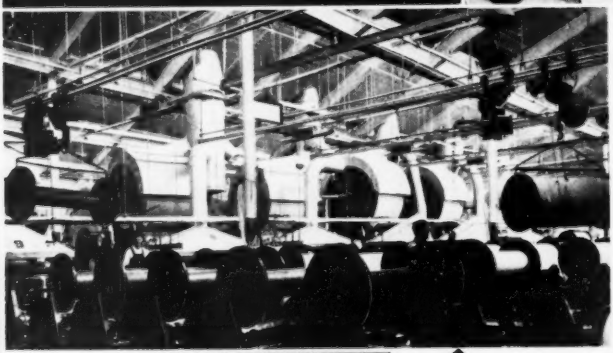

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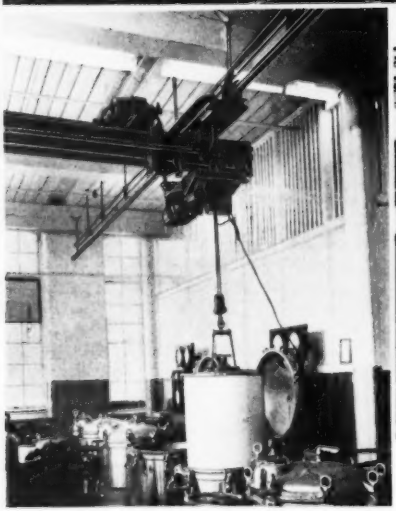

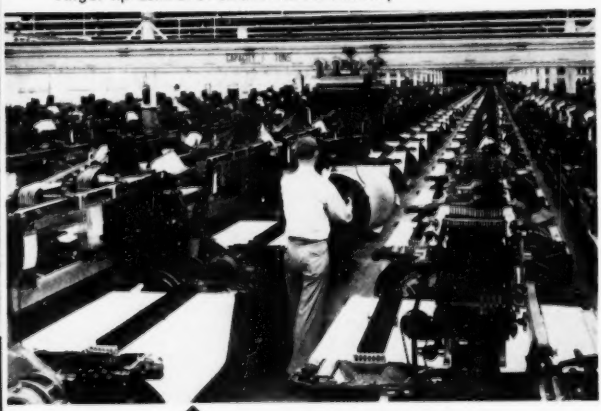

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**TABLE VI**

**Needle Hole Fusion at 60 F—40% RH and 75 F—65% RH**

| Fabric | Fused Needle Holes | |
|---|---|---|
| | 60 F — 40% RH | 75 F — 65% RH |
| Green Island | 36 | 48 |
| Green Island | 17 | 48 |
| Green Island | 29 | 48 |
| Green Island | 19 | 48 |

**TABLE VII**

**Effect of Finish on Reduction in Fused Holes**

| Finish | Fused Needle Holes /3" | | |
|---|---|---|---|
| | As Received | .25% Finish | .75% Finish |
| No. 1 | 48 | 46 | 35 |
| No. 2 | 48 | 45 | 45 |
| No. 3 | 48 | 21 | 0 |
| No. 4 | 48 | 44 | 0 |
| No. 5 | 48 | 41 | 0 |

employing the best finish for the achievement of desired hand must also require consideration of the effect on sewing.

The mechanism which is postulated for both the yarn cutting and the needle hole fusion requires that the yarn surrounding the needle, as it enters the fabric, must be free to slip aside to permit the relatively large diameter to pass easily through the fabric. Any resistance to this spreading apart of the yarn bundles will result in increased friction and resultant fusion temperatures. Close examination of the cut yarn ends revealed shearing rather than fusing action. Thus, an effective softening finish must also provide adequate lubricity if these defects are to be avoided.

# Yarn and Fabric Construction for Water Resistance

By DR. G. H. SEGALL
Canadian Industries Limited

IN THE last ten years considerable advances have been made in the manufacture of water repellent textiles and in the development of laboratory evaluation procedures for predicting their performance in actual use. Real progress commenced with the development and evaluation of testing procedures emphasizing the measurement of the resistance of the treated fabric to water penetration rather than the efficiency of the treating agent as a water-repellent.

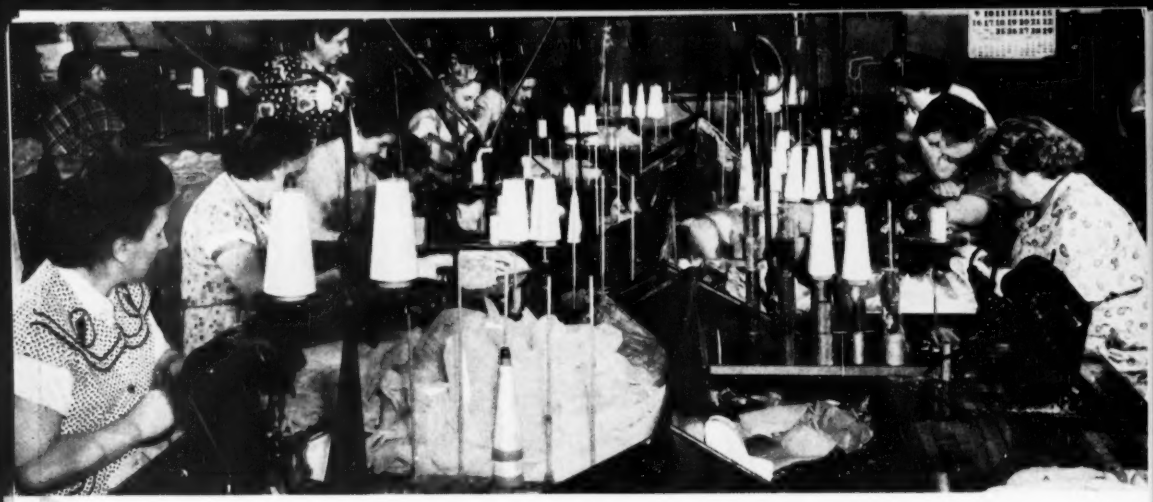
It can only be concluded that the course of the impact of a water drop on a fabric is not controlled to any appreciable degree by the nature of the material making up the fabric. It was thus necessary to seek another explanation which would account for resistance to water penetration in terms of fabric properties.

A theory has been developed which is supported by experimental data involving a relationship between the pore size of the fabric and the interfiber distance on the surface of the yarns comprising the fabric pore walls. It has been shown that good resistance to water penetration is secured when the hydrostatic pressure resistance P of the fabric corresponds with the pressure $P_r$ required to force water between the fibers on the surface of the yarns comprising the fabric pore wall. P is a function of both fabric pore size and the interfiber distances on the surface of the yarn while $P_r$ is a function only of the latter. In the accompanying table are listed some of the typical results obtained.

It is evident that good resistance to water penetration is associated with a high degree of correspondence between P and $P_r$ and that this relationship holds over a wide range of pore sizes. Such correspondence is important because it should cause a rapid dissipation of pressure produced by the impingement of a water drop on the pore. This might be represented diagrammatically as shown in the accompanying diagram [page 161].

A is an idealized schematic representation of the case where $P=P_r$. The interfiber spaces act as orifices equivalent in capacity to the fabric pore itself. Upon impact of a water drop, relatively little penetrates to the bottom surface of the fabric but is distributed laterally into the wall of the pore. After the pressure build-up subsides, the repellent forces the water back and equilibrium is re-established.

| Fabric No. | Thickness Mils. | Pore Size (5) Microns | P cmH$^2$O | PY cmH$^2$O | Drop Penetration (6) Test | AATCC Rain Test Head Failure |
|---|---|---|---|---|---|---|
| 1 | 8.9 | 13.06 | 46.3 | 480 | 10 cc. in 1 min. 30 sec. | 2 ft. |
| 2 | 10.2 | 12.08 | 55.8 | 238 | 10 cc. in 2 min. 30 sec. | 2 ft. |
| 3 | 11.4 | 11.84 | 60.4 | 190 | 10 cc. in 7 min. 40 sec. | 5 ft. |
| 4 | 10.7 | 14.46 | 55.6 | 126 | 10 cc. in 10 min. 15 sec. | 6 ft. |
| 5 | 16 | 23.2 | 45.3 | 54 | 10 cc. in 20 min. | 7 ft. |
| 6 | 10.6 | 12.12 | 80.6 | 91 | 10 cc. in 100 min. | 8 ft. |
| 7 | 18 | 10.24 | 90.2 | 94 | 4.2 cc. in 180 min. | 8 ft. |
| 8 | 13 | 9.32 | 98.5 | 84 | 10 cc. in 127 min. | 8 ft. |
| 9 | 15 | 9.92 | 92.1 | 84.2 | 10 cc. in 113 min. | 8 ft. |



**NO MORE LUBRICATION WORRIES.** Sidele Fashions, Inc., of Philadelphia, manufacturer of women's rayon and nylon blouses, keeps 275 sewing machines in constant operation. The oil in use a year ago formed crystalline deposits which prevented lubrication and necessitated a lot of costly maintenance. The trouble was eliminated when the company changed to Sunotex.

# FAST-MOVING PARTS PROTECTED BY SUNOTEX MACHINE OIL LIGHT

Sidele Fashions, Inc., uses more than 275 sewing machines in the manufacture of nylon and rayon blouses. Running at speeds as high as 5500 rpm, these machines require the finest of lubrication. But a year ago they were not getting it, and Sidele was concerned. The oil in use formed crystalline deposits which coated and hardened the wicks—preventing them from lubricating bearings and other fast-moving parts. Crystals also formed on the oil screens, in the oil lines, and at the bottom of the sump. Parts had to be replaced frequently, and every machine had to be torn down and cleaned completely several times a year.

A Sun representative, called in to study the situation, persuaded Sidele to run a 6 month test on Sunotex Machine Oil Light. This was done on an overlock stitching machine, which operates at the highest temperature of all the equipment in the shop. The results were completely satisfactory, and as a result Sunotex has been used on all 275 machines ever since. Though far less costly than the oil it replaced, Sunotex, because of its high chemical stability, does not form deposits. Consequently the wicks are always soft and all moving parts are kept well lubricated. The machines need only routine cleaning. Sunotex, in addition to being an efficient lubricant, scours out easily and completely when it is accidentally dropped on fabrics.

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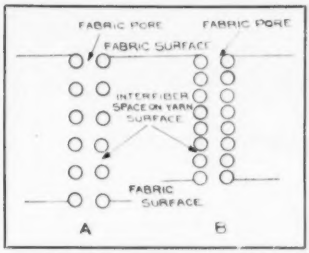
Fabrics 5-9 would be represented by such a picture.

Figure B represents conditions where the interfiber space on the yarn surface is considerably less than the pore radius, hence $P_r$ is less than P. Since the pressure required to force water through the fabric pore is small compared to the inter-fiber penetration pressure $P_r$, the pore may be considered as a rigid walled tube and the




**Schematic diagram of fabric pores.**

amount of water forced through the fabric by the impact of the water drop will be a function only of the normal pressure drop in the tube according to the capillary and hydraulic equations.

When a type B pore eventually becomes filled with water because of interfiber film formation, impingement of a water drop on the pore causes temporary water displacement in each of the wall orifices. The actual displacement on the output side of the pore hence will be only a fraction $\frac{I}{N}$ (N is the number of equivalent orifices in the pore) of that forced through a type B pore. This accounts for the observed differences in fabrics, and the ability of certain fabrics to resist penetration even after considerable water is absorbed.

The new principle of the function of fabric construction as related to the water-repellency of textiles described in this paper may be summarized as follows. At a given tightness of weave, optimum performance is obtained when the hydrostatic pressure resistance of the fabric is equal to the interfiber penetration pressure of the yarn surface forming the fabric pore walls.

In terms of fabric construction, this means that the choice of proper yarns with respect to their density in the finished fabric is as important as tightness of weave and the use of a good water repellent finish. The fabrics described in this paper were of the Oxford construction. Variations in weave, thickness, and other constructional factors which affect the size, length inclination, and shape of the fabric pores will all have more or less profound effects on the level of performance obtained. At any given pore size the optimum results will depend on correspondence between P and $P_r$.



# Quality Evaluations and Improvements to Cotton

By FRANCIS L. GERDES
U. S. Dept. of Agriculture

THE practice of taking into account certain fiber properties along with grade and staple length in selecting cotton for specific use by cotton manufacturers in the United States has been greatly intensified in recent years, as brought out by studies made by the Department, in co-operation with the American cotton manufacturing industry, during the 1944-45 season and the 1950-51 season. In a period of only 6 years, remarkable progress has been indicated in the practical use of fiber-testing techniques.

The studies showed that fiber fineness and strength were the two quality factors for which laboratory tests were more generally used. Samples representing about 56% of the cotton consumed by representative mills in the 1950-51 season were tested for fineness as compared with only about 10% in 1944-45.

Tests for fiber strength were made on about 60% of the cotton consumed in 1950-51, as compared with 16% reported for 1944-45. Fiber maturity tests, important in indicating probable neppiness and affinity of cotton for dye, increased from 6% in 1944-45 to 14% in 1950-51.

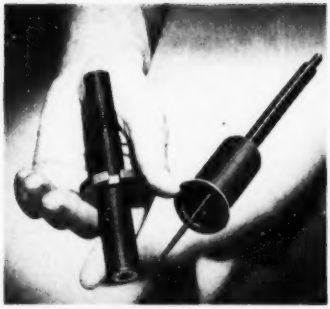
Mills employ one of three different methods for applying laboratory tests to the cotton they buy or use. The most general method used in determining which bales are to be tested is that of random sampling, by which as high as 10% of the bales in some mills and as low as 1% in others are selected for testing. By the method of composite sampling some mills take a small portion of cotton from each classing sample to form one laboratory sample to represent an entire lot. The various tests are then applied to this one blended sample. A few mills tested each bale used, with respect to one or more fiber properties.

This study confirmed the increased reliance mills have placed on laboratory tests in recent years as a means of making a more precise determination of the qualities of raw cotton used for specific products.

The proportion of cotton reported as bought by mills on the basis of variety increased slightly and amounted to about 15% in 1950-51. The buying of cotton by mills from specific areas of growth has become more popular as evidenced by an increase from about 34% of purchases in 1944-45 to 69% in 1950-51. In actual practice, purchases on the basis of area of growth are essentially the same thing as purchase on variety in those areas where production is standardized by variety.

# Now you can be sure of CLEANER YARN...

***one of many advantages of this new uptwister spindle***



**UNIFLEX SPINDLES** have no free oil. Therefore no oil spray can soil your yarn. Proof is shown by absence of oil drip when fully lubricated step is held upside down. Sealed felt pads, lubricated by injection only once a year, meter oil to the bearings through porous bronze bushings.

**FLEXIBLE LOWER BLADE** cuts down vibration . . . reduces bearing loads . . . lengthens spindle life . . . lowers power consumption. Uniflex Roller Bearing Spindles are standard equipment on all new Unirail Uptwisters.

## Reduce your costs, too, with NEW UNIFLEX SPINDLES on your uptwisters

**Lower Power Costs.** Because the Uniflex lower blade reduces bearing loads. Also, both upper and lower bearings are especially designed to cut power requirements, while a hardened steel ball takes the entire thrust load on a small area of contact . . . another power saving feature. Field tests to date indicate power savings of more than 15% over plain bearing spindles.

**Lower Maintenance Costs.** Because the Uniflex Spindle greatly reduces oiling and cleaning cycles and other attention. Less vibration means less heat and wear, for longer, trouble-free service life. Uniflex Roller Bearing Spindles not only assure a cleaner product but more economical production.

**WRITE FOR BULLETIN S1.** Get all the information about how Uniflex Spindles make uptwisters produce more and better yarn at lower costs.

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**ASQC TEXTILE DIVISION OFFICERS** (left to right): Chairman Hailes, Vice-Chairman Adams, Secretary Reynold, Regional Councilman Smith, Treasurer Hamby, retiring Secretary Wesson, and Regional Councilman Rudnick.

## *American Society for Quality Control Now has a Textile Division*

*Staff Report*

The textile industry is now represented in the American Society for Quality Control by a Textile Division. Official charter for the division was presented to new Textile Division officers at the Third Annual Conference on Textile Quality Control at Clemson College, August 22-23.

ASQC now has over six thousand members in many industries, and as was pointed out by spokesmen at the conference, the textile industry and its new ASQC division can take advantage of the experience of all other industries, since the principle of quality control applies universally. The next annual convention of the Society will take place in Philadelphia; more than two thousand members attended the last one.

Simon Collier of Johns-Manville Corporation is president of ASQC. In his charter presentation address, he emphasized that the Society is not a group of statisticians, but is composed of men who are interested in quality control—and to remove the mystery from the words "quality control," he explained that it is simply a plan whereby "you try to insure that the material you are producing meets established standards." Anything that will enable an improvement in quality is quality control, he said.

Mr. Collier, who showed a motion picture on quality control to the conferees, pointed out that quality control must be sold to top level management, superintendents and overseers, and the individual employees if the program is to be successful. And no quality control program can be successful if any one of the foregoing groups fails to play its part.

The speaker suggested initial studies in specific departments to prove that a quality control program can be set up, before instituting the work on a plant-wide basis.

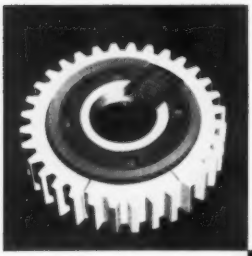
Officers of the Textile Division of American Society for Quality Control are:

Chairman, Gardner M. Hailes, Avondale Mills, Sylacauga, Ala.; vice-chairman, Cleveland L. Adams, formerly of West Point Manufacturing Co., Lanett (Ala.) Mill Division, and now head of School of Textile Technology, Alabama Polytechnic Institute, Auburn, Ala.; secretary, John H. Reynold, Celanese Corporation of America, Rome, Ga.; treasurer, Dame S. Hamby, School of Textiles, N. C. State College, Raleigh, N. C.

Regional councilmen are Edward S. Rudnick, Wamsutta Mills, New Bedford, Mass., and W. S. Smith, West Point Manufacturing Co., Research Division, Shawmut, Ala. Mr. Smith is retiring chairman of the Textile Technical Committee, forerunner of the Textile Division of ASQC, and Miss Mary Jo Wesson is retiring secretary of the committee.

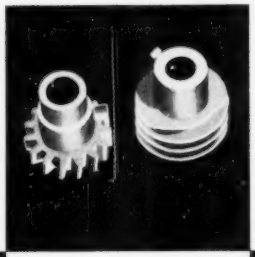
The newly formed Textile Division has published a supplement of 96 pages to "Industrial Quality Control," with articles by a number of textile quality control specialists in the textile industry, plus a helpful bibliography. It may be secured from the American Society for Quality Control, Room 5036, 70 East 45th Street, New York 17, N. Y.

# How's YOUR supply of Loom Parts?



CRANK SHAFT GEAR, a machine cut gear that is split (or Batex) for easy installation.

BTM PART No. 21902-X

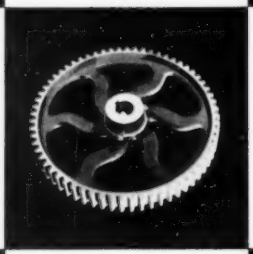


CLOTH ROLL GEAR and WORM. Steel hardened and ground bore. Lasts the life of the loom.

BTM PARTS No. 2414-S & 3018-S

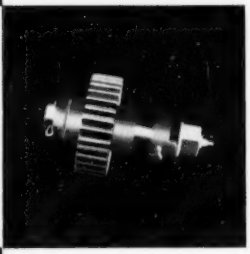
CAM SHAFT GEAR with precision machine cut teeth. Gives outstanding service.

BTM PART No. 66931



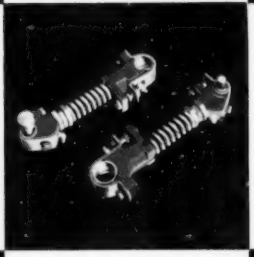
IDLE GEAR ASSEMBLY with 54198-H stud collars, nuts and washers. Brass bushing. Hardened and ground stud. Alemite fitting.

BTM PART No. 3003-XK



FILLING CAM FOLLOWER complete with ball bearing. Hardened and ground steel stud.

BTM PART No. 16818-X

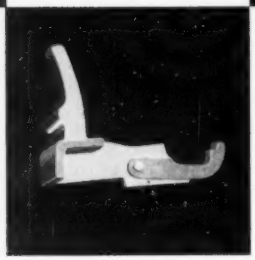


SPRING CRANK ARM, complete with 58938 Crank pin (replacement for Wood Crank arms).

BTM PART No. 67848-A

THREAD CUTTER with hardened and ground steel blade. Cuts keener, wears longer.

BTM PART No. 3625-D



TREADLE ROLL, antifriction ball bearing, grease packed. Eliminates fire hazard.

BTM PART No. 68092

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Greenville, South Carolina

# Is It Wrong to Resist Robbery?

By RINGGOLD ARDEN

NINETY-FIVE years ago the Supreme Court of the United States ruled that a fugitive slave escaping into free country must be returned to his master. Sometime soon we may have a ruling from the present Supreme Court on whether a fugitive corporation escaping into free country must be returned to its oppressors or pay them an indemnity for escaping.

The case in point is, of course, that of the Mount Hope Finishing Company, which, like the unhappy Dred Scott, fled from its bondage (in this case a labor union) in Massachusetts, and settled down in North Carolina, where, happily, people are still free to work for whom they please, on terms acceptable to themselves.

An official of the National Labor Relations Board, having investigated this fugitive corporation, has recently ruled that it must either move back into the bondage from which it escaped, or import its bondage to North Carolina at its own expense. Furthermore, the people who ran it out of Massachusetts have been awarded a year's wages for their efforts.

This writer is not familiar with all of the details of this affair, and has purposely avoided digging into them, because to do so would only complicate matters, and therefore is setting forth merely the bare circumstances, but they are principles that affect supposedly free citizens of these United States.

The situation of the Mount Hope Finishing Company at the time of its decision to move out of Massachusetts is of course a very common one. There are many textile firms which have moved South during the past 30 years, since the big migration started, for the good reason of getting more settled labor conditions. Under our peculiar labor laws, it has been necessary for these firms to be very secretive about their real reason for fleeing to freer territory, and maybe this is the first case where circumstances were such as to give the labor union hope of repossessing its captive corporation, or at least of getting hold of a sizable chunk of its bank account.

It seems quite unthinkable that any Supreme Court could possibly uphold the ruling of this official of the National Labor Relations Board and at the same time maintain that the United States are still governed by their Constitution. However, this ruling stands until overthrown by some competent court, and it opens up some interesting conjectures.

► If it is unlawful for people owning a manufacturing plant to move that plant to another section of the country because its operating costs were too high in the original location, might it not be unlawful for a man to move from the city out into the country simply because he thought the cost of living in the city was too high?

► Would not the merchants with whom this man traded in the city have just as valid a claim on his continuing support as the employees in a manufacturing plant had on the continuation of their employment? There is not the slightest doubt that if enough people move out of a city into the suburban area, a lot of city merchants are going to go hungry or go broke, and their clerks will likewise suffer and certainly lose their jobs.

► If there is any logic in prohibiting the migration of an employer because this throws people out of work in the original locality, could not the same logic, such as it is, be applied in the other case? It is done in Russia and it used to be done in Germany. Maybe some day it will be done here. About all you have to do is to get an entering wedge on a thing like this and there is no telling where it can wind up. The CIO has furnished the entering wedge in this Mount Hope Finishing Company case.

Very shortly after this Mount Hope Finishing Company thing popped up in the news, the directors of the E-Z Mills in Bennington, Vermont, apparently reached the same conclusion that the Mount Hope people had reached, and decided that there was no future in Bennington. This company has for some years operated a plant in Cartersville, Georgia, and presumably conditions were so much more satisfactory in Cartersville than in Bennington that the company felt that the expense of the move would be profitable.

The CIO, flushed with its temporary victory in the Mount Hope case, decided to take time by the forelock and appeal to the National Labor Relations Board to forbid the E-Z Mills to move. To date we have not heard of any decision on this interesting appeal. We note also that the CIO is suing the E-Z Mills for loss of pay by the workers on some sort of claim, but with an easy-going National Labor Relations Board, it would probably seem a pity not to put in a claim for something.

Joseph Salerno, New England

## Effects of Natural and Artificial Sunlight on Textiles

To provide needed information about the action of short-wave radiation on textiles and to evaluate the practical utility of this radiation in accelerated weathering techniques, tests* were conducted at the Southern Regional Research Laboratory, New Orleans, La., wherein the degradative effects produced in cotton and other textile fibers by unfiltered light from a "Sunshine" type carbon arc lamp were compared with those which occured in identical materials during natural weather exposure tests.

When unfinished cotton print cloth was irradiated for 15 hours by light from the carbon arc, either with or without water spray, the resulting strength losses were of the same order as those caused by exposing the fabric for 6 months to natural weather. Fluidity increases in these tests were greatest in natural weather, lowest in the dry arc irradiation, and intermediate but approaching those of natural weather in the arc-plus-spray test.

Results of the accelerated tests of chemically finished print cloth were highly misleading in respect to the performance of like samples exposed to the action of natural weather. Fluidity values in the artificial tests were generally small and poorly differentiated, while strength losses varied widely from those observed in natural weather. Although several of the finishing compounds acted to increase degradation of the cotton in natural exposure conditions, all of them proved to be nonsensitizing to cotton in the accelerated tests. These results gave no indication that the unfiltered carbon arc radiation could be used to advantage in predicting the durability of chemically finished cotton in outdoor service. It could instead be concluded that correlation among strength losses of finished samples in the two types of test is governed largely by the nature of the finishing agents. Agreement would be good if a majority of these compounds proved to be nonsensitizing in natural weather, but poor if many of them were actively sensitizing.

The strength losses suffered by the different yarns after 10 hours of arc irradiation were found to be in fair qualitative agreement with those caused by 6 weeks of exposure to natural weather. Although the fluidity increases which occurred in the cellulosic yarns during carbon arc irradiation were consistently lower than those observed in replicate samples exposed to natural weather, the general agreement of strength losses in the different tests suggested some possible value for the unfiltered arc radiation in determining the weather-resisting qualities of unfinished textile fibers.

Information available from several sources made it possible to identify with some certainty the different mechanisms by which either near or far ultraviolet light acts to break down cellulose. No satisfactory explanation could be advanced for the puzzling effects of heterogenous ultraviolet light on chemically finished cotton, beyond the rather indefinite suggestion that various finishing agents may possess the power of absorbing light at certain frequencies and then re-emitting it at other frequencies.

*Complete report, "Effects of Unfiltered Carbon Arc Light in Accelerated Weathering of Cotton and Other Textiles," J. D. Dean, C. M. Fleming, and R. T. O'Connor, Southern Regional Research Laboratory, New Orleans, La., was published in "Textile Research Journal," September, 1952, pages 609-616.

director of the union, was quoted in a press dispatch from Bennington as having charged that 600 employees were thrown out of jobs following a union victory in a collective bargaining election. This leads to some more interesting conjectures. Can a group of people, by the mere act of choosing a certain union as their bargaining agent, thereby acquire proprietary rights in their employer's property? It would seem that the officials of the CIO think so.

Who owns the property where a union is in control of the employees? It would appear from the Mount Hope case that the employees are supposed to own it. They have claimed, to the satisfaction of the Labor Relations Board examiner, that the company had no right to move this property out from under the control of the union, or to endeavor to salvage values which the union was determined to exhaust for the benefit of the company's employees.

In this E-Z Mills case, the union seems to be implying that the stockholders of this corporation do not really own it, and have no right to move it, but must be forced to leave it where it is to be operated under conditions dictated by the labor unions. This appears to be the plain intent of the present action instituted by the union against this company.

We do not believe that any responsible court could for a moment uphold these union activities in either of these cases. According to this union argument, it would be unlawful for a man set upon by footpads to flee to safety. He would be supposed to stand peacefully to be robbed, or having fled to a safe distance, the long arm of the law could be invoked either to bring him back, or bring back his money, which after all was what the footpads wanted in the first place.

We have for years commonly referred to some labor unions as rackets. We have done this because we feel that the term "racket" as colloquially used in the United States rather adequately describes these labor organizations. We believe any organization possessing the power to forcibly deprive any person or persons of the lawful use of legally acquired property is a racket. We likewise feel that any organization which operates a monopoly, unregulated or unrestrained by law, is a racket.

Cases like these of the Mount Hope Finishing Company and the E-Z Mills are constantly confirming our belief that some labor monopolies are rackets rather than responsible organizations trying to do business honestly and fairly, and worthy of the respect of the public. (*Continued on page* 169)

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provide the answer to the demand for
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Particularly recommended for PRINTING fine cotton and rayon dress fabrics and draperies. Unequaled for all around fastness to washing, chlorine or peroxide bleaching and soda boiling.

Pleasing in their self-shades . . . fully satisfying in combinations. Naturally, the AMANTHRENE colors are equally well suited for DYEING cotton and rayon fibers.

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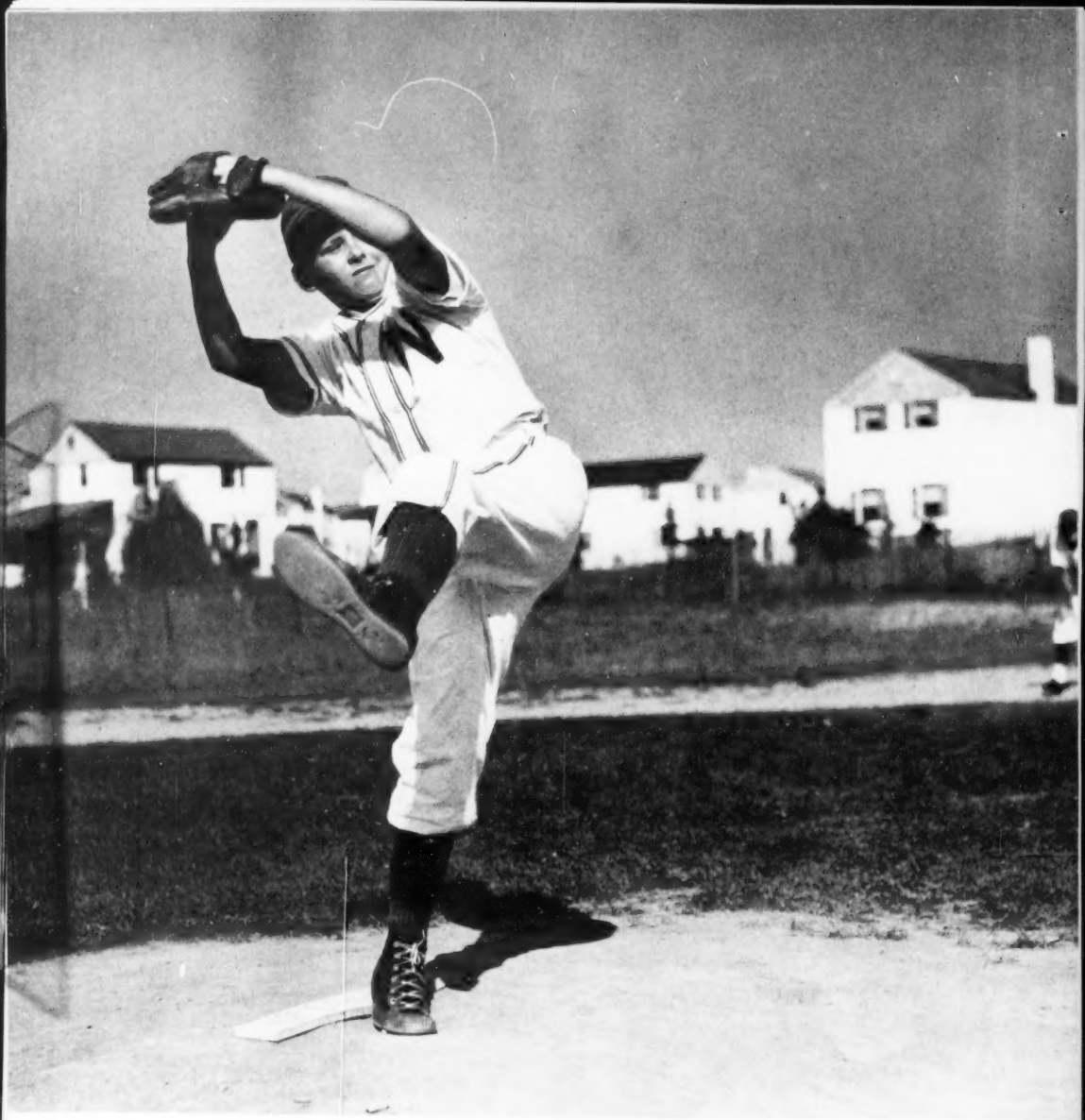


*He's a great little pitcher — BUT*

## How does he compare with Billy Martin?

Billy Martin of Houston, Texas, pitched a no-hit, no-run game to beat Rhode Island, 5-0, in the 1950 Little League World Series at Williamsport, Pa. After a one-day rest, he hurled a one-hitter to beat Connecticut, 2-1, and give Texas the 1950 Championship.

In everything we do, we make comparisons . . . In Full-Fashioned Knitting, the one standard for comparison is the 30-section "Reading" Machine with a production of 14 to 16 dozen pairs of superior quality stockings in 8 hours. Simple and flexible in operation. 51-gauge, 60-gauge.

TEXTILE MACHINE WORKS • READING, PENNA.

Additional recent newspaper dispatches shed light on the peculiar labor union attitude that the unions are always fully entitled to the protection of the law when molested in their activities, but above the operation of the law when the same sort of molestation appears to be to the advantage of the union. It seems that a group of citizens in Hazelhurst, Georgia, who had probably been reading the newspapers, came to the conclusion that some union organizers were persona non grata, and invited them to leave town. Perhaps some of the things that these townsfolk had been reading in the paper were similar to the following dispatches.

*The Atlanta Journal*: "Railroad Bridge Dynamited in Union Coal Feud." This dispatch went on to describe how a railroad bridge was dynamited near Manchester, Kentucky, to prevent shipment of

(*Continued on page 239*)

## *You Must Know Your Costs—and Sell Accordingly*

*(Last year, leaders in the hosiery manufacturing industry learned that the "low market" was primarily due to mills not knowing their costs. A campaign was begun whereby cost data and cost procedure was made available to the plants. A further campaign stressed these basic points: "Know your costs; don't sell without a profit; and don't make goods you can't sell." This abstract of an address by Mark Jay King, Jr., management consultant, before the meeting of the Southern Hosiery Manufacturers Association is a continuation of those campaigns.—Eds.)*

Many of you undoubtedly found that you were actually losing money on some items but made enough profit on others to hide the losses and make the total picture seem satisfactory. Some manufacturers I know put the soft pedal on losing items and let their less obervant competitors take that business. You all know that there have been several hosiery mills for sale in the past year. There will be more in the coming year.

Some manufacturers decided to put special sales effort behind the items which their newly found cost facts proved specially profitable and have been able to weather the recent storm rather successfully. Other manufacturers did nothing.

I have asked lots of them why they did nothing different after getting their cost breakdown accurately. The general concensus is that they thought it was fine information to have, but there was nothing special they could do but go along as they had and hope for the best. Still it was nice to know the figures and *hope* they would not get too many orders on the heavy losers and *hope* the buyers would start ordering some of the more profitable items. Then they filed their cost sheets away in a desk drawer—complacent that they knew the facts of life—and referred the matter to the "Ho Hum Department" for interment.

Once you have sound and reliable cost information, there are endless ways to use it to put money in your pocket. The most obvious thing is to go through your mill step by step to study ways of reducing the cost of making, handling, and packing. To do it right, you must forget you ever saw your mill before. Look at each step with a pair of "borrowed" eyes and keep asking yourself the question, "Why do we do it this way?" and at each step say to yourself, "There must be an easier way." Never mind whether you have been doing it that way for many years or before grandpa died. When you are sure you have done all you can to improve Methods, Layout, Personnel Attitude and Organization, look at other things. Better yet, look at other things at the same time—and don't neglect paper work routines.

One of the most important uses for cost data is the handling, strengthening, and revising of sales and marketing strategy. If you operate through a selling agent, be sure the agent has not *sold* you a bill of goods instead of selling the customers. I find indications that *some* selling agents have ceased to be such and have become buyers' agents. They practically run a mill for the benefit of their commissions and the buyers, with the supplying mill a necessary evil to that end.

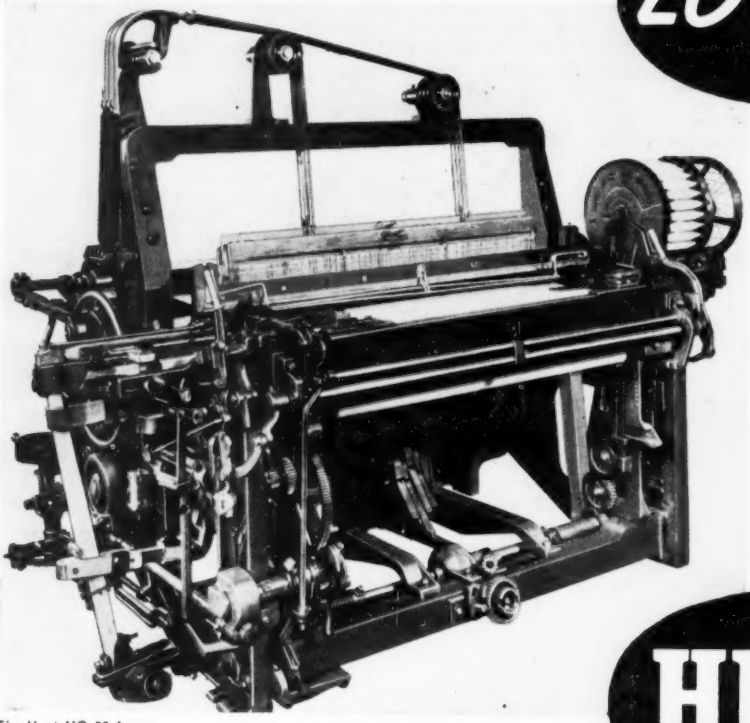
I have known agents to tell a mill management to do so-and-so to the packing, for which the agent is going to get the mill 5¢ more a dozen. Instead of the mill management going to its cost data and telling the agent it costs 8¢ more a dozen to do it and the price will be 10¢ more to the customer, management stretches its neck where the rope has been put around it and fills the order.

Show the salesmen, the agents, the customer what the extra cost is for variations from standard. The customer will respect you for knowing your business and either let you make a profit or give that business to another mill which will go broke at it and get out of your hair. If I were a manufacturer, I would be more interested in one reason why you *can* adopt a firm attitude than in the 57 reasons why you can not.

Let's look at the subject of color assortments, now that you know your costs. You note, for example, that the dye cost for a certain maize formula runs $3.00 per hundred. For the same style, a maroon costs $7.50, and a navy formula costs $9.00, etc. So you take the cost of every dye formula you have and come up with an average dye cost for the plant. When the orders come in you find the assortments consist of the five most expensive colors and none of those at the average or below. We all know that it is not practical to have a price for each color, but you can use your cost information to set a selling price which takes care of such things. Educate your representatives and enlighten your customers.

You can, you should, and you must gain management vision through the proper use of your cost information. As sure as you are sitting here, you either will prosper or falter according to how seriously you consider the cold fact that *without vision, a business perishes.*

# 2 NEW HI-SPEED LOOMS



*The Hunt HC 50 Loom*

by HUNT

The new cotton looms, HC 50 and HL 16, by Hunt, feature heavy construction in the sides. Both looms are equipped with the improved Hunt Spreader that has four bearings to stabilize the crankshaft and two additional bearings on the camshaft.

**THE HC 50 LOOM**

***permits operation at high speed with continuous production. Features include:***

1. The weaving of heavy cotton fabrics up to 64 in. wide
2. The Hunt No. 8 individual motor drive with demountable gear
3. Roll and shaft, or Brown spring-top harness motion, or 20-harness dobby
4. A crankshaft diameter of 1⅝ in. A camshaft diameter of 1-15/16 in.
5. Single or double side-filling stop motion, or a center-filling stop motion

**THE HL 16 LOOM FEATURES:**

1. Lighter constructions of cotton fabrics up to 60 in. wide.
2. The Hunt No. 1 drive with tapered bushings and demountable gear
3. Roll and shaft, or Brown spring-top harness motion, or 12-harness dobby
4. A crankshaft diameter of either 1⅝ in. or 1⅜ in. A camshaft diameter of 1-9/16 in.
5. Single or double side-filling stop motion
6. Electric or sliding bar warp stop motion

*The HC 50 and HL 16 Looms have many features that insure trouble-free operation.*

*Write now for descriptive folder and further details.*

**See these Hunt Looms and other Hunt Products at the Greenville Textile Show — October 6-11 (inclusive). Booths # 129 and 130**

**HUNT LOOM & MACHINE WORKS, Inc.**

**200 Academy St. Greenville, S. C.**

# Cotton Fiber and Manufacturing Tests Available Under the Cotton Testing and Service Act

The various cotton fiber and manufacturing tests available on a fee basis under the Cotton Testing Service Act are described in a recent U.S.D.A. publication entitled "Cotton Testing Service" in order to acquaint cotton breeders, producers, merchants, manufacturers, and others, with the methods employed in making the tests, and with the significance of the test results. A complete list of the tests available and the schedule of fees are shown in a companion publication entitled "Regulations and Fees for Cotton Testing Service," effective January 1, 1952.

Testing laboratories are operated by the Cotton Branch as follows:

Research and Testing Division, Washington 25, D. C., Clemson Cotton Laboratory, Clemson, S. C., Stoneville Cotton Laboratory, Stoneville, Miss., College Station Cotton Laboratory, College Station, Tex., and Mesilla Park Cotton Laboratory, Mesilla Park, N. Mex.

The scheduling of tests and the supervision and coordination of the work of all five laboratories are carried out through the Cotton Branch of the Production and Marketing Administration, U. S. Department of Agriculture, Washington, D. C. Therefore, where feasible and for most expeditious service, inquiries concerning tests should be addressed to the Washington office as follows:

Cotton Branch (Research and Testing Division), Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C.

The Washington office will notify the person requesting service tests to which laboratory his samples should be sent. If desired, however, requests may be made directly to the laboratory nearest the applicant and test samples may be sent to such laboratory. Samples for tests to be performed at other laboratories will be prepared and forwarded by the laboratory receiving the samples. All seed cotton samples from pink boll worm areas that require ginning prior to testing should be forwarded to the Mesilla Park laboratory.

All inquiries concerning policies or the broad interpretation of test results should be addressed to the Washington office. Questions concerning specific test results may be addressed to the laboratory which prepared the report on such tests.

**Table 1.—Kinds of service tests performed at each of the five testing laboratories operated by the Cotton Branch, July 1952**

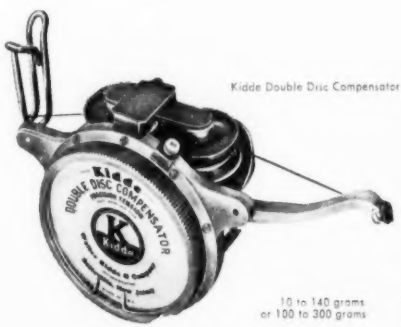
| Kind of test | Types of laboratory | | | | |
|---|---|---|---|---|---|
| | Fiber and spinning | | Fiber and ginning | | Fiber |
| | Clemson S. C. | College Station Tex. | Stoneville Miss. | Mesilla Park N. Mex. | Washington |
| Cotton Seed: | | | | | |
| Ginning of test samples | No | No | Yes | Yes | No |
| Foreign matter content | No | No | Yes | Yes | No |
| Moisture content | Yes | Yes | Yes | Yes | Yes |
| Fiber tests: | | | | | |
| Length (array) | Yes | Yes | No | No | Yes |
| Length (Fibrograph) | Yes | Yes | Yes | Yes | Yes |
| Strength | Yes | Yes | Yes | Yes | Yes |
| Fineness and Maturity (array) | Yes | Yes | No | No | Yes |
| Fineness (Micronaire) | Yes | Yes | Yes | Yes | Yes |
| Maturity (random sample) | Yes | Yes | Yes | Yes | Yes |
| Cross section | No | No | No | No | Yes |
| Furnishing check samples | No | No | No | No | Yes |
| Blending test samples | Yes | Yes | Yes | Yes | Yes |
| Moisture content | Yes | Yes | Yes | Yes | Yes |
| Foreign matter content | Yes | Yes | Yes | Yes | Yes |
| Classification | No | No | No | No | Yes |
| Processing tests: | | | | | |
| Spinning, carded yarns 1/ | Yes | Yes | No | No | No |
| Spinning, combed yarns 1/ | Yes | No | No | No | No |
| Slashing and weaving 2/ | Yes | No | No | No | No |
| Other tests: | | | | | |
| Furnishing identified samples | Yes | Yes | Yes | Yes | Yes |
| Furnishing copies of results | Yes | Yes | Yes | Yes | Yes |

1/ Includes all extra items performed in connection with the spinning tests and other items which are a part of the spinning tests.

2/ Includes spinning of the yarn and testing of the fabric in connection with spinning tests.

# how ABBOTT WINDERS are tension controlled at TEXTRON

Textron has about a thousand *Kidde* Double Disc Compensators on their Abbott Winders. Why? Because *Kidde* Double Disc Compensators: 1) Assure uniform tension throughout the quill 2) Control tension at bunch 3) Prevent sloughing off due to soft quills 4) Relieve yarn tension at *start* of bunch, thereby promoting longer quill and washer life 5) Prevent deformed and crushed quills when winding nylon. If you use Abbott Winders on any kind of synthetic yarn (rayon, nylon, Orlon, Dacron (Polyester Fiber) Dynel, etc.) *Kidde* Double Disc Compensators will improve the handling. Write today for full information.




Kidde Double Disc Compensator

10 to 140 grams
or 100 to 300 grams

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## Hosiery Men Meet at Roanoke

(*Continued from page* 151)

tive plan and are paid a premium each week based on productivity and costs for their department.

Dan May, May Hosiery Mills, Nashville, Tenn., gave one of the most commented upon talks of the meeting. He pointed out that the soft goods industry, and hosiery in particular, is one of the few major industries in the U. S. in which there is still free price competition. Agriculture, labor, big business, and the utilities, he said, compete in one sense but seldom is competition on a price basis. We have outlawed monopoly, he stated, but it has been replaced by "oligopoly," the control by a few large companies or the government, and price competition disappears.

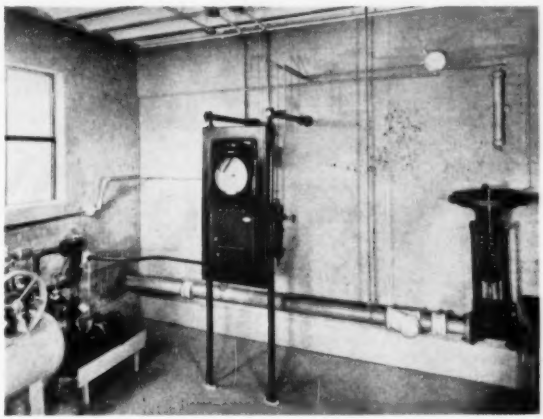
## pH Control Solves Bleachery Waste Problem

Acid and alkaline wastes at a New England textile finishing plant are reported to be effectively neutralized under Foxboro pH Control, furnishing conditions for optimum biological activity and efficient waste disposal.

The separate wastes are collected in equalization tanks. To create a neutral pH condition in the underground mixing basin, a closely regulated flow of acid waste is mixed with the alkali. The resulting effluent is then further treated on trickling filters.

pH is controlled by a recording "Dynalog" controller located in the pump house. A small circulating pump supplies a continuous sample to a flow-type electrode. As the measured pH changes, the controller operates a 3" rubber-lined Saunders patent valve in the acid line to maintain the desired condition.

Since the efficiency of this waste disposal system depends on an unchanging neutral pH, control is automatically maintained within the desired tolerance limits despite variations in acid and alkaline waste concentration and rates of flow.



**PUMPING STATION** view showing pH Controller in the center. At the left is a flow-type electrode mounted above a circulating pump. At the right, a 3" Saunders patent valve, regulating the flow in the acid waste line.

## Putting Human Relations to Work in Clerical Cost Control

A new method of clerical cost control based on the principle that employees want to do a fair day's work and are eager to measure their contributions by the use of objective yardsticks is said to have proved itself by actual test over a six-months period in the office of a large eastern corporation. Although the effort coincided in part with a seasonal low in the firm's business, the overall efficiency of this office group improved gradually from 73.6 per cent prior to the establishment of the controls to 86.1 per cent—an increase of 17 per cent at the 20th week of operation.

At the end of the 26th week, the high level of efficiency continued to be maintained, according to Samuel M. Fisher, Jr., manager of the Wage and Salary Division of Fischer, Rudge and Neblett, Inc., New York, which installed and supervised the system. Larger gains are anticipated as the firm's work load returns to normal, with a "target" minimum of 90 per cent—which would be a 23 per cent improvement overall.

Attributing the program's effectiveness to its wedding of cost reduction and improved morale, Mr. Fisher explained that human relations methods had been coordinated with technical engineering in designing and installing the program. Training is also an integral part of the program. "Both employer and employees have benefitted by the plan," he said.

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Address: Editor "Textile Industries," 806 Peachtree St., N. E., Atlanta, Ga.

# Having Trouble with Streaks in Bale-Dyed Drill?

EDITOR TEXTILE INDUSTRIES:

We have a quantity of 3/1 drill cloth that has been bale-dyed with direct color. By "bale-dyed" we mean that the cloth was processed directly into the dye bath without any preliminary treatment. Of course, this type of fabric still has the size in it.

Streaks appear across the width of the cloth, similar to set marks made by the slasher roll, where the fabric did not dye evenly. The streaks are in no set pattern and are always the same width across the cloth.

Can you or your readers tell me what is probably causing this difficulty?

CONTRIBUTOR No. 8501

EDITOR TEXTILE INDUSTRIES:

The defect mentioned by CONTRIBUTOR No. 8501 may be a result of improper scouring of the piece before dyeing, a resist of some kind due to different rate of absorption at the fold, and insufficient time for wetting out the cloth prior to dyeing.

I have seen machines running sulphur colors on grey goods and doing an excellent job in terms of evenness and penetration; and with the proper wetting agents in the color bath, direct dyes should also be satisfactory. Unless the shades are very dark, the goods may be run directly from the bale through a heavy set pad. The Du Pont pad-steam process does a nice job.

The difficulty may be caused by some type of scum collecting in the dye bath and at times collecting in the roller or in the folds. In the absence of singeing and/or brushing, a great deal of lint collects in the liquor and is carried up to the nip. Here the deposit exerts additional squeeze and removes some of the color. This may be true, especially when the pad is stopped and the foreign matter collects on the surface of the liquor; as a rule it happens toward one end of the nip.

To solve the problem, I suggest putting a wood doctor blade (padded with cloth) against the lower bowl in such a way that any lint is scraped off the bowl before it has a chance to run into the nip. Occasional cleaning of the doctor blade will obviate the trouble.

Another possibility is that scum is carried up on the cloth to the dry cans where again additional squeeze is exerted so that a light area appears; in other words, at

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**Send your entry NOW!**

*This contest ends November 15, 1952.*

*Every kink, short-cut, time-saver, or quality improvement suggestion entered in the contest will be paid for immediately upon acceptance. The $100 award will be made as soon as all entries are received.*

**The contest rules are simple:**

*All contributions must be postmarked not later than midnight, November 15, 1952.*

*No limit to the number of entries an individual may submit in any one contest.*

*All entries paid for upon acceptance—no waiting. Extra payment for photographs that are usable. Extra consideration is also given kinks accompanied by legible pencil sketches or drawings.*

*Entries must not have been published previously.*

**Send your contest entry to:**
**Editor TEXTILE INDUSTRIES, 806 Peachtree Street, N. E., Atlanta 5, Georgia.**

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that point the color migrates.

CONTRIBUTOR No. 8502

EDITOR TEXTILE INDUSTRIES:

The sample of drill cloth in question was dyed with direct dyes. There is no evidence of tendering in either the solidly dyed portions or in the resisted portions of the material.

Microscopically, we find the presence of considerable starch in the white resist area which accounts for the stiffness of the cloth in that area and is also responsible for the resist in the dyed sample.

CONTRIBUTOR No. 8510

## Way to Oil Aprons on Wool Cards

EDITOR TEXTILE INDUSTRIES:

According to an article I read in TEXTILE INDUSTRIES, oiling aprons on double-apron wool cards is done by using a perforated, hollow, flannel-covered roll, which is allowed to roll free between the rear and forward sets of aprons. I should like to obtain some additional information regarding the flannel-covered oiling roll, such as: size of tube perforation, number of perforations per square inch, type of oil used, viscosity of oil, and type of flannel used to cover the roll; also, at what rate the oil is absorbed by the aprons.

CONTRIBUTOR No. 8471

EDITOR TEXTILE INDUSTRIES:

The tubing should be 1½" x 68" for a 60" wide condenser, preferably steel tubing. Plug the tube at one end permanently, and at the other end weld or shrink an iron plug firmly into the tube. Then drill and pipe thread a ½" or larger hole through the plug. Screw an ordinary water pipe plug into the threaded hole. The threaded plug can be removed for filling the tube with apron oil. Any good rub apron oil can be used.

The size and number of holes depend on the viscosity of the oil, but holes 1/16 of an inch or smaller are usually suitable for neatsfoot or oils of the same viscosity. Two layers of thin flannel wound onto the roll in strips 1½ inches wide provide a satisfactory roll cover. Wind one strip from right to left, and the other from left to right; then wrap string around both ends of the roll to secure the two layers of cloth.

The absorption of the oil by the aprons depends on the number and size of the perforations. Approximately one hole per square inch is sufficient.

CONTRIBUTOR No. 8472

## Mill Pieces Yarn with Adhesive

EDITOR TEXTILE INDUSTRIES:

We have received several inquiries from mills in this country and abroad regarding the method and material we use to piece the yarn together as mentioned in the article which appeared on page 89 of the May 1952 issue of TEXTILE INDUSTRIES.

We use in this operation a product put up by the Pioneer Latex and Chemical Company. The produce is called "Splic-It." This product, or similar ones, are used quite generally in the manufacture of yarn that is used on sewing machines of the type employed in producing chenille rugs and bed spread yarn.

The glue is applied by hand from a small two-ounce bottle fixed with a hole drilled in the cap and suspended from the operator's neck by a cord. The bottle is suspended about waist high. By turning the bottle over on the forefinger, the operator gets a sufficient quantity of adhesive for the size yarn she is running. The hole in the cap of the bottle varies with the fineness or coarseness of the yarn. The correct size is determined by experimenting.

The glue sets up almost instantly and makes a splice equally as strong as the yarn itself. The operator has found that she can do a faster job by using the adhesive (on coarse counts) than by tying yarn with a knotter or by hand.

CONTRIBUTOR No. 8512

## Keep Skewers and Creels in Good Condition

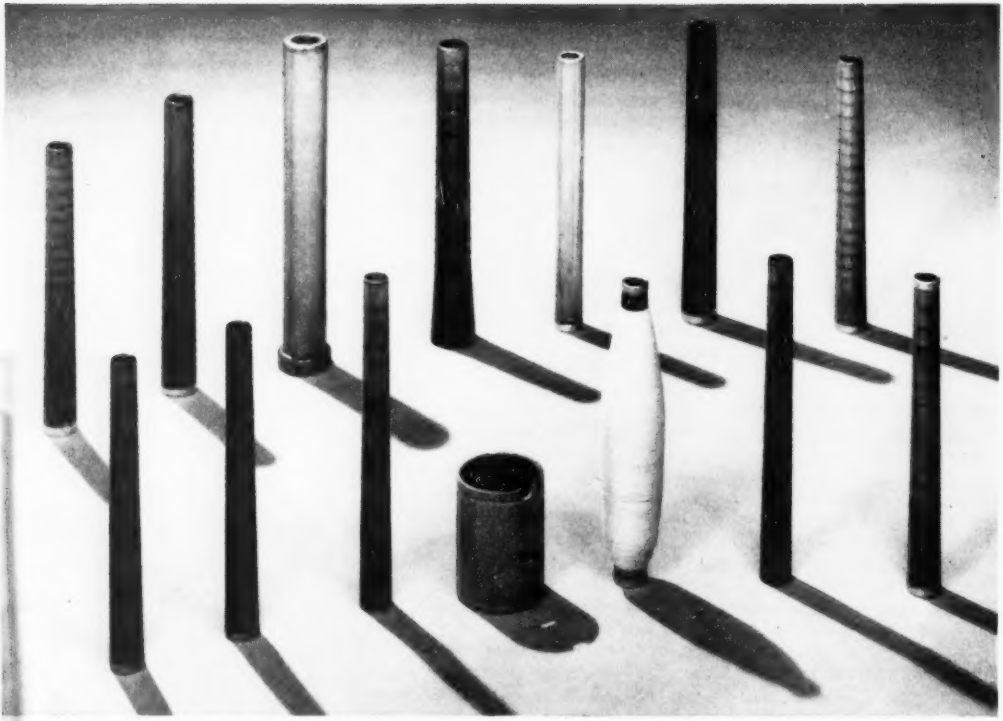
EDITOR TEXTILE INDUSTRIES:

Many mills today run single process roving and insert a minimum amount of twist; therefore, production on fly frames is usually higher and the cost is lower. Also, in my opinion, the roving will draft better in spinning with a minimum of twist. Unless creels and skewers are kept in good condition, serious consequences may become evident in the spinning room.

When the spinning frames run poorly, and the trouble seems to be caused by stretched roving, before putting more twist into the roving, spinning creels and skewers should be checked thoroughly.

Friction between the point of the skewer and the porcelain insert in the creel should be sufficient to keep a uniform delivery of roving into the back roll without jerking or stretching the roving. Variations in tension at this point will cause variation in yarn size, and consequently a variation in tensile strength and twist. If these conditions are allowed to go unchecked, the best spinning room may become fouled.

Porcelain inserts should be cleaned each time a fresh bobbin



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of roving is inserted, and any cracked or broken inserts should be replaced with new ones. In one mill I saw a bottle cap substituted for a cracked insert—definitely a poor practice.

Skewers with worn tips should be replaced immediately with new or reworked units. Care should be taken to be certain that all skewers in the frame are the correct size. Skewer tips should not be sharpened with a knife because a sharp tip may be made, thereby reducing the friction between the skewer and the insert. Reduced friction at this point will produce variation in yarn size.

Skewers with worn or uneven tips should be rubbed with a fine emery cloth until the tips are smooth. Then the tips should be polished or burned on a buffing machine to impart a hard finish to the tip. The hard finish should extend the life of the skewer.

Creels should be kept in line at all times. If the bottom and top boards are out of line, and the holes in each do not coincide, the skewer will be out of line and will permit the roving to be fed spasmodically instead of uniformly.

I have found that proper care and maintenance of creels and skewers can increase the quality of yarn and cut the cost of production.

CONTRIBUTOR No. 8487

## Hosiery Menders Also Inspect Goods

EDITOR TEXTILE INDUSTRIES:

An analysis of the methods used in processing hosiery by the grey departments of many hosiery mills indicates that hosiery manufacturers are overlooking numerous factors which affect the cost of operation.

In the search for continually lower cost in producing hosiery, simplification can often be achieved by only slight revisions and rearrangement of the flow of grey goods, without expensive outlay for new equipment or remodeling.

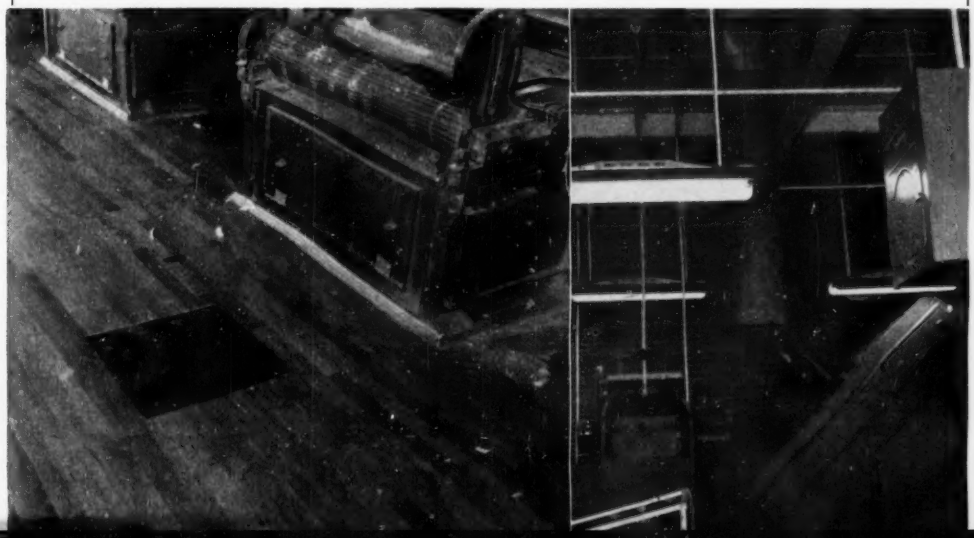
An example of unnecessary cost encountered, is the routing of grey

## Chute Delivers Card Waste to Opener Room

Delivering waste from the card room to the opener room was a time-consuming operation in one southern mill before a simple but effective short cut was conceived.

A hole about 12″ square was cut through the floor of the card room which is located above the opener room. A piece of metal pipe was fastened to the ceiling adjacent to the hole in the opener room, and now the card waste may be dropped through the hole in the floor in the card room. The metal pipe serves as a chute to deposit the waste on the opener room floor beside waste feeder hopper, thereby saving considerable labor in handling the waste.

A metal cap is provided to cover the hole in the floor when the chute is not in use.



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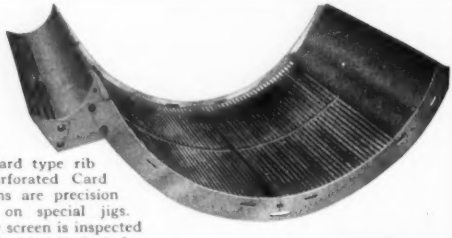

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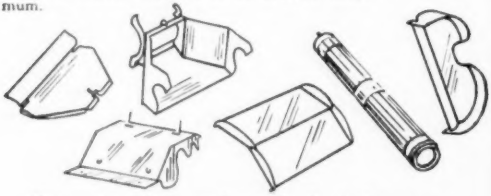

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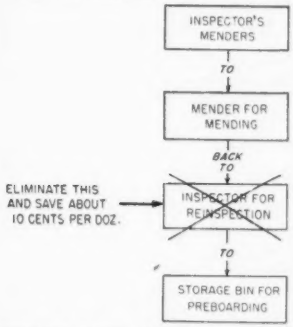
menders from the inspector to the mender operator, and sending the mended hosiery back to an inspector again. Such operations add to the cost of inspection.

In this instance, mount an inspection form directly over and about ten inches above the mender's table. Having the mender inspect the hosiery as she mends it will be an advantage to her, and not add any labor to her job. The mender should receive the hosiery in sufficient quantity to form a unit, so that when mended it can be sent directly to storage, preboarding room, or elsewhere. If the stockings are "latch-ups" identify them as "menders", but if they are "picks" to be machine-mended only, pass them as first quality if the grade is justified.




This system should result in a saving of 7 to 12 cents on every dozen mended, and will also eliminate the cost of back-track handling. A mill producing 5000 dozens weekly and having 6% menders can save approximately $30 weekly, which amounts to $1500 annually.

CONTRIBUTOR No. 8507

## Discussion: Tension on Roving Frames

EDITOR TEXTILE INDUSTRIES:

We are having trouble with 7 x 3½ conventional draft roving frames. Upon starting up after a doff, the ends seem to run tight until about one-third or more of the full amount of roving is put onto the bobbin. At this point the ends seem to have the correct tension, and the tension remains satisfactory until the next doff.

On bobbins one-third full and less, our 85s yarn number will run 90s. After the bobbin becomes one-third full the yarn number graduates to 85s and 84s. What is the trouble with these roving frames?

The frames are equipped with chain drive compounds, chain drive spindles and bobbin gears. In the last changeover the twist constant was changed from 124.0 to 62.08. This is single twist gearing; we changed from double gear.

CONTRIBUTOR No. 8292

EDITOR TEXTILE INDUSTRIES:

It is unfortunate that CONTRIBUTOR No. 8292 should not mention the hank counts and material he is using on the 7 x 3½ frames. As he has described the condition, it appears that the frames, starting at high tension, have finally imparted so much tension that the roving is stretched apart. This gives the false illusion that at the full bobbin the ends are slack, although in reality the ends fall apart from stretching.

The frame should be started with a tension gear having three teeth less tension. If three teeth provide too much slack, try two teeth less tension.

In checking the tension, a man should stay with the frame, checking the tension every few layers. This may be done as follows:

Lift an end about three inches above the flyer with a pencil. Hold the end up for a second, and then let it drop suddenly. If the dropped end stays slack, loops for about two seconds, and then straightens out, the tension is reasonably correct. If the end is picked up quickly (with no slack), the tension is high and should be reduced. Do this at frequent intervals during a doff, and note the extent of slack or stretch at various positions.

Many roving foremen are unaware of the fact that when taking out a tooth of twist the tension gear should also be changed to give somewhat less tension. When putting in an extra tooth of twist the tension gear only rarely requires changing because the tension tends to be a little less, a condition which is not harmful.

I do not think that the changeover of gears would have anything to do with the trouble. Manufacturers are careful to maintain the basic ratios of gear trains. In this instance it was necessary to reduce the twist gear by one half because the constant was reduced one half, assuming that the hank count remains the same.

62 is a small constant for a 7 x 3 frame. A 10-hank would call for about a 25-tooth gear, depending on the material. One tooth would effect a twist change of 4%, enough to affect the tension.

If the compound ratios and cone ratios are the same as before the changeover, this is a simple matter of choosing correct lay and tension.

A summary of steps to adjust tension is as follows:

(1) Be sure the lay-per-inch is correct.

(2) Set cones at start so the ends will be slightly slack. (They should flap a little when hitting the bare bobbin while second layer is winding.)

(3) According to the symptoms described, this man should try to put in a "slacker" tension gear—two teeth to begin with.

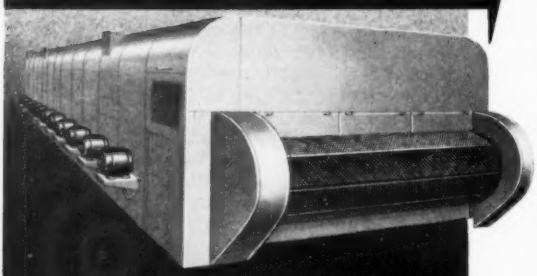
(4) Stay with first doff and check ends frequently.

The fact that the yarn is light at top of bobbin shows that the roving is stretched, a serious handicap.

In view of the fact that the ends stand a considerable amount of stretch, without being stretched too much, it is difficult to discover actual over-stretching.

Play safe, and keep ends slightly slack at all times, check tension frequently, and if facilities are

# SARGENT'S STOCK DRYER



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available, check roving on Belger tester.

CONTRIBUTOR No. 8294

EDITOR TEXTILE INDUSTRIES:

The trouble CONTRIBUTOR No. 8292 describes may be due to the rack not being run completely back at the start of the doff, thereby not positioning the belt at the smallest point on the bottom cone. If the belt is not put back to run on the smallest circumference of the bottom cone, then of course, the bobbins run faster than they should through the first few traverses, thereby producing too much tension.

Sometimes the trouble described may be overcome by changing the bottom cone gear. A smaller gear on the bottom cone will turn the bobbins slower and will reduce the tension. Of course, if everything else is set up correctly, changing the bottom cone gear should produce less tension throughout the entire doff and not only on the first few traverses. However, I have found that, by using a smaller bottom cone gear as the starting point, other adjustments to tension can be made to produce a well built bobbin.

CONTRIBUTOR No. 8296

## Question: Full-Fashioned Hosiery Inventory

EDITOR TEXTILE INDUSTRIES:

What type of systems are commonly used in recording the finished goods inventory in full-fashioned mills? Is inventory plotted graphically against sales for future reference? Do the systems in use permit an adequate inventory of styles according to seasonal demand? We should appreciate comments from your readers regarding the foregoing questions.

CONTRIBUTOR No. 8499

# The Great Claiming Race

(*Continued from page* 87)

morning and signed up for new automobiles and farm machinery, after finding out how well off they were. Less than two weeks later, however, it appeared that not too much had been done for the farmers after all, or least not enough so that the farmers could tuck away a few dollars for a time when there would be no rainy day. A great many of these highly favored beneficiaries of Government largesse stoutly maintained that they were in a terrible fix and without a nickel to tide them over until another harvest could replace their drouth-stricken crops.

These enthusiastic politician friends of everyone who would like to get somebody else's money, also went to great lengths to explain how much they had done for the working man. Oddly enough, at that very moment, about 600,000 of these highly benefitted, but thoroughly discontented, working men had our steel industry shut down and a lot of soldiers in Asia wondering where their next bullet was coming from. The fierce discontent generated in the breasts of these beneficiaries of the current political regime stemmed from the fact that the 600,000 were only getting about 20 per cent more wages than the average of employed industrial workers, and that hurt their feelings. They felt they were entitled to at least 35 per cent more wages than the other working people, and were determined to get it, and before the radios all over the country quit rattling from the oratory, they did get it.

How many million other working people who can now be ashamed of their paltry earnings will bestir themselves to remedy this defect remains to be seen. Several large segments of the labor monoply population have already put in their bids to raise the prices of what the happy, highly benefited people will have to buy. Or at least what the labor racketeers *hope* they will have to buy. In case a good many millions of persons decide they don't *have* to buy it, and decide to sit things out for a while, the politicians who have brought so much widespread happiness and contentment to all of us will no doubt be pained at this show of ingratitude.

After considering some of these aspects of the current scene, a faint doubt might arise in the mind of a person with a naturally suspicious nature about the genuineness and solidity of all of these alleged "benefits." Maybe there is something wrong with a system whose benefits are so impermanent. A prosperity so all-pervasive and rampant that it leads prominent politicians to drool into their microphones certainly ought to fix folks up after ten years or so to stand a little adversity. Yet, somehow or other, whenever there is a big strike, in just a couple of weeks thousands of persons are clamoring for the Government or somebody else to feed them to keep up their strength sufficiently to throw monkey wrenches into the economic gears of the United States.

Whatever prosperity we have, even though the politicians have undermined it so that it may cave in any day, is due to the efforts of our inventors, scientists, chemists and designers, and to managements capable of turning ideas into merchantable things. The farmers' lot has been tremendously improved by the men who invented better farm machinery, and those who built it at prices that the farmers could afford to pay. Farms that formerly required ten hired men may now operate with one or two. The politicians claim of course that only their handouts of public funds enabled the farmers to buy these machines. They are discreetly silent about the fact that some of their other activities made the machines cost about three or four times as much as they should have in depreciating dollars.

The textile mill of today runs with about one-half to one-third of the help it would have needed 50 years ago. In every industrial field the story is the same, and this is the true story of our prosperity.

What we call "technological im-

provements" have consistently increased the standards of living of the people of the United States at the rate of approximately three per cent a year for the last 75 or 80 years, since any sort of dependable statistics have been preserved. Three per cent a year, compounded constantly, will double a principle amount in less than 20 years. Our standard of living would therefore automatically be four times as good in 1952 as in 1912, and without frequent Government tinkering, the dollar could be worth four times as much as in 1912, instead of only about one-third as much.

One of the distinguished gentlemen who praised the "improvements" of the last 20 years most fulsomely referred critically to the wretched inflationary edifice of the 1920's which crashed so ignominously in 1929. A prudent silence covered his beliefs about what is going to happen to the current wretched inflationary structure. Let's take a quick look at these two inflations and try to figure out which has been the worse.

The last inflation reached its crest about 1928, and it began to subside in the latter part of 1929. The national income at the crest of that inflation was somewhere around 80 billion dollars in round figures. It was somewhat more than that, but 80 billions will do for the present calculations. Between 1928 and 1952, over a span of 24 years, a national economic improvement factor of 3 per cent per annum would raise our national income about 120 per cent, so that on a 1928 basis, this would have jumped up to 176 billion dollars. The population has, however, increased about 28 per cent since 1928, so we will have to take that into account and the income for 1952 in 1928 dollars would be 225 billion.

The cost-of-living index in 1952 is, however, about 58 per cent higher than it was in 1928, and we must therefore add 58 per cent to our estimated income to bring it in line with what it ought to be to fit the cost of living. We now arrive at a total income of 355 billion dollars, which should be the national income in 1952 if we had merely done as well in this boom as we did in the last one on a per capita basis.

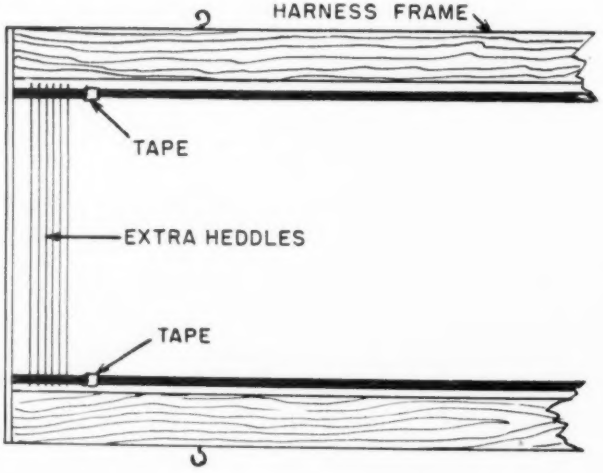
Now how about what we have actually done. No figures are in of course for the 1952 national income, but optimistic estimates put this at 350 billion dollars. This year the Government will collect around 80 billions in taxes and in 1928 it collected less than five billion, which leaves a difference of 75 billion as one of the accomplishments of a planned economy. If we substract this difference in taxes from the estimated national income, we arrive at a net national income of 275 billion dollars after taxes, which is the only income that really amounts to anything.

Unless there is something wrong with these figures, it seems that our blatant politicians have got a deficit of about 80 billion dollars to account for, and which seems to have turned up missing. We realize of course that this estimate is quite rough, but hardly rough enough to account for 80 billion dollars slipping away into thin air.

The truth of the matter seems to be that the politicians have striven manfully to hold our prosperity back, but we have done fairly well anyhow if we can just forget all about that horrid thing—the National Debt. In all of the Chicago oratory, we failed to note one teeny, weeny, little reference to this 250 billion dollar deficit account to which the "improvements" of the past 20 years have been charged.

That first politician who stood there waiting for Adam to be created, and bragging about *his* rain, had plenty of gall, but some of his modern descendants need offer no apologies.

CONTRIBUTOR No. 8513




## Keep Extra Heddles in Harness Frame

*This item was submitted in a kink contest.*

EDITOR TEXTILE INDUSTRIES:

In almost every weave room when harnesses are drawn there are extra heddles on each harness. In most instances the heddles are taken off and have to be put on again when another warp is drawn in.

When we have extra heddles on harnesses, we push them over to the side of the harness frame near the end and a short piece of commercial tape wrapped around the top and bottom heddle rod holds the heddles out of the way. In this way the unused heddles cannot slide over into the warp heddles.

Also, this saves us the trouble of taking the heddles off and putting them back on the harness each time we draw in a new warp.

CONTRIBUTOR NO. 8505

# Let Du Pont work with you in dyeing suitings of *DACRON* and WOOL

**To help the manufacturer** dye these suitings in the most effective and economical way, Du Pont's technical service experts went right to his mill and worked with him in developing his dyeing procedure.

This is an example of how past experience and test results were applied so that problems might be avoided in dyeing a fabric with man-made fiber content—this one a blend of "Dacron" and wool.

When you have a dyeing problem with any blend, call on Du Pont. Our technical service representatives are in a position to draw on Du Pont's unique experience as both a producer of dyes and a creator of man-made fibers. They will study your problem with you and work with you in solving it.

At Du Pont, research is directed toward constantly improving dyes and dyeing methods. Keep in touch with Du Pont for the latest developments. E. I. du Pont de Nemours & Co. (Inc.), Dyes and Chemicals Division, Wilmington 98, Delaware.

*Dacron is Du Pont's trade-mark for its polyester fiber.*

DU PONT
REG. U. S. PAT. OFF.

*Du Pont Dyes*

150th Anniversary

BETTER THINGS FOR BETTER LIVING... *THROUGH CHEMISTRY*

# CARTONS as well as CONTENTS ARRIVE DAISY-FRESH in APACO CORRUGATED CASES

The only thing battered packages are good for is a clearance sale.

Handsomely printed APACO folding cartons reach the shelves fresh as daisies when they travel in rugged APACO corrugated shipping cases.

Photo Courtesy Muscogee Mills

**ATLANTA PAPER COMPANY**
Atlanta 2, Georgia

• Manufacturers of Corrugated Shipping Cases • Display Folding Cartons • Textile Packaging

## Sliver Tester

*(Continued from page 99)*

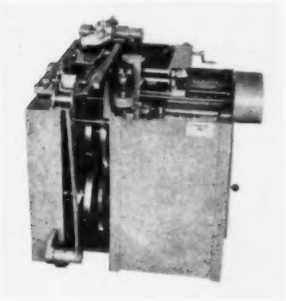
ing feeding apparatus, including a guide, a roller and a comb with its grid, a nipper with an upper jaw and a lower leather-trimmed jaw, a driving-in rake, a movable table bearing a pinned field made of a set of fallers, and a drawing-off arrangement complete with a circular brush.

Fibers are removed from the sliver being tested and one end of each fiber is secured on a baseline perpendicular to the length of the fiber. The fibers are sorted in zones of decreasing length. These successive tufts are then weighed. They show in regard to the whole sample a proportion which enables calculation of: the mean length or Schlumberger length, the barbe, and the cumulative length frequency curve. With this information, an accurate characterization of the sliver tested can be made, showing its composition in fibers of various length.

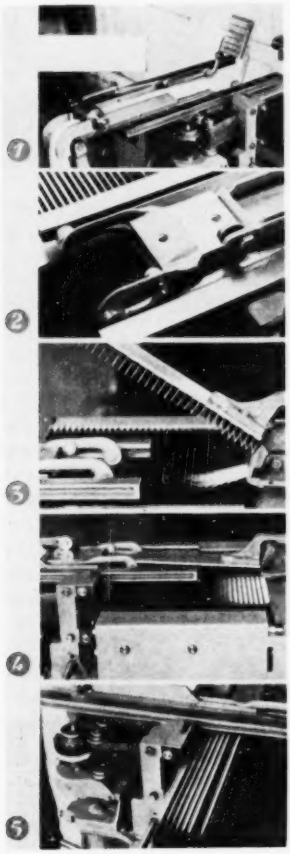
With the assistance of this analyzer, it is possible to create in twenty to thirty minutes an accurate diagram that formerly required three to four hours.

*Texplant Corp., 65 Bedford St., Stamford, Conn.*

For additional data, request item J-111, using business reply card on page 230.



**Above, the Schlumber automatic sliver tester (Texplant). Below, photos show how instrument operates.**




# NEW Equipment AND MATERIALS

***Other items are described on pages 97 and 99***

## Energy Indicators for New and Existing Nappers

A new method of indicating energy on both Gessner double and single acting nappers has been developed.

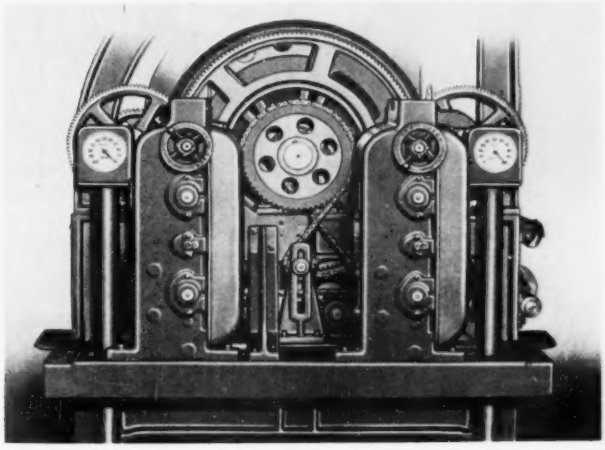
Gessner Energy Indicators give a constant and continuous indication of energy as the napper is being operated. Any change in this energy force is instantly observed. The fact that this energy indication can be tabulated for future references is particularly important if at any time it is necessary to duplicate previously napped finishes.

These indicators are now included on all new Gessner nappers and can also be installed on existing Gessner nappers, depending upon the model.

*David Gessner Co., Worcester, Mass.*

For additional data, request item J-103, using business reply card on page 230.

**View of Gessner napper equipped with energy indicators.**



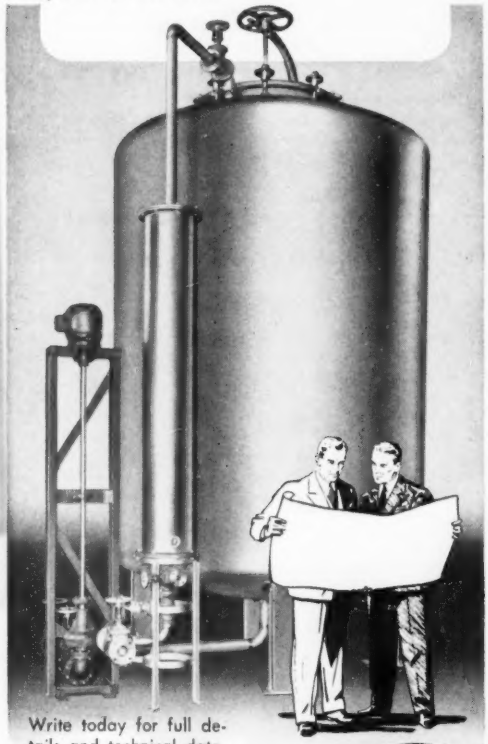
# ALLEN KIERS

## *Engineered...*

## TO YOUR SPECIFICATIONS

Famous Allen Worcester complete stainless pump and heater kiers are the answer to your short run and heavy goods problems where quality control is important. Full liquor strength maintained . . . no live steam admitted . . . positive circulation. For raw stock, knit goods, heavy goods for vat dyeing, thread and yarn, toweling, curtain goods, varying lots, *you must have kiers — Allen Kiers.*

Allen Worcester also installs modern circulation systems on old kiers.



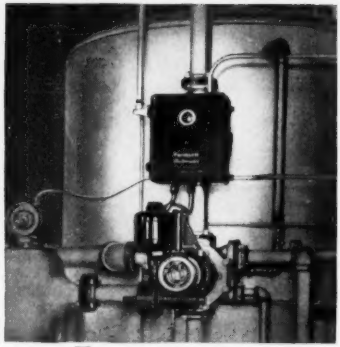
Write today for full details and technical data.

**WILLIAM ALLEN SON'S COMPANY**
WORCESTER 1, MASS.

ALLEN WORCESTER

*Makers of the famous* ALLEN KIERS

# *IN goes* Permutit Q



# *OUT comes more* SOFT WATER

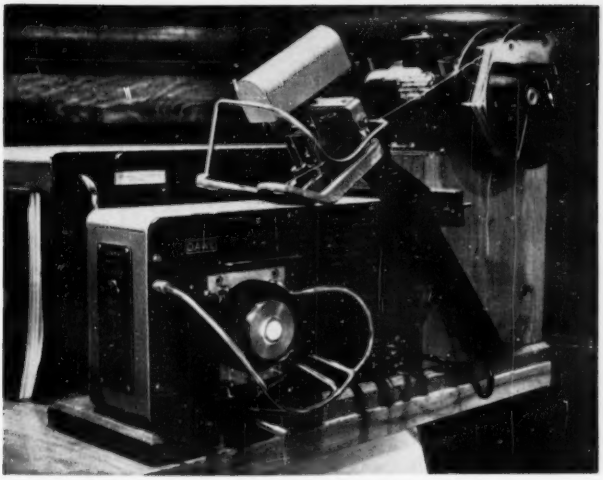
Change to Permutit Q and your present water softener will do a bigger, better job. This remarkable new zeolite permits higher flow rates, softens more water in less time, requires less salt for regeneration.

And while you're at it, you can add to your savings in time and money with automatic controls! They can be quickly and easily installed on your present water softener . . . making regeneration fully automatic and assuring maximum efficiency. This way you'll get a constant supply of clear, soft water at a savings in costly man-hours of labor.

For further information, write to: THE PERMUTIT COMPANY, DEPT. TW-10, 330 WEST 42ND STREET, NEW YORK 36, NEW YORK, or to Permutit Company of Canada Ltd., 6975 Jeanne Mance Street, Montreal.

**PERMUTIT®**

WATER CONDITIONING & ION EXCHANGE HEADQUARTERS



"Linra" Photo Slubber (Dawe Instruments) detects slubs in yarn.

## Machine Detects Slubs, Cuts Yarn for Removal

Now available is an electronic device that detects slubs in yarn while it is being wound from spinning bobbins to cones or other packages, and cuts the yarn ahead of the slub so that it can be removed by an operative.

In operation, a beam of light from a projector lamp passes through two apertures to a balanced photocell system using a differential amplifier. A standard yarn of equivalent light transmission is fitted across one aperture while the test yarn passes through the other aperture at the normal winding speed of several hundred yards per minute. If the test yarn exceeds a pre-determined thickness, the amplifier output operates a thyratron which has an electromagnetic cutter in the anode circuit. The yarn is cut before the "slub" reaches the cutter so that the slub can be removed by the operator.

The apparatus, designated the "Linra" Photo Slubber, is designed so that the winding operation cannot be performed without the yarn passing through the cutting head. The equipment is suitable for continuous 24-hour-a-day operation.

A central power unit is employed to operate an individual optical unit for each winding head.

Air at a pressure slightly above atmospheric is fed to the optical head, thereby preventing risk of faulty operation due to accumulation of lint and dust in the slit.

*Dowe Instruments Ltd., Hanwell. London, England.*

For additional data, request item J-118, using buisness replay card on page 230.

## Ceramic Fiber Withstands Heat of 2300 F

Outstanding properties of a new manmade, ceramic fiber called "Fiberfrax" are: resists temperatures up to 2300 F without loss of properties, and does not soften at temperatures approaching 3000 F.; has excellent filtration characteristics; is resilient, light in weight, and not subject to corrosion by most chemicals.

At the present stage of development, the fiber is available only in bulk form; however, work is under way to produce it in felted blanket rolls, firmly bonded batts, tape, and paperlike forms with a wide range of thicknesses and characteristics. It is not available in spun or woven form as yet, but mixtures with other fibers permit carding and spinning.

"Fiberfrax" is made by melting aluminum oxide, silica, and certain modifying agents in an electric furnace, then subjecting a molten stream of the material to an air blast. The stream is blown into fine fibers which are collected with special equipment.

Potential uses include industrial fabrics such as brake linings, filter cloths, wicks, etc.

*Carborundum Co., Refractories Div., Perth Amboy, N. J.*

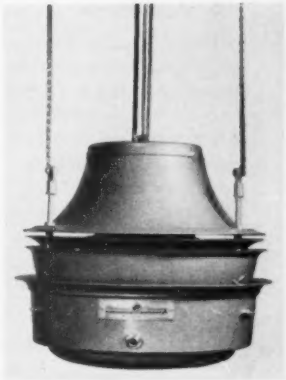
For additional data, request item J-120, using business reply card on page 230.

## Self-Contained Humidifier Hangs from Ceiling

The Type E Humidifier is designed to provide automatically controlled humidification in all types of textile mills. Units may be used for complete humidification systems, for spot humidification in large spaces, for boosting the capacity of existing systems, and for precise humidity control in laboratories.

The self-contained units are quickly and simply installed by suspending from ceiling, then connecting water supply and electricity. Water is atomized by centrifugal force and distributed horizontally through a 360-degree opening. Any portion of the discharge opening may be blocked off for directional distribution. Units evaporate up to 3 gallons per hour and may be installed singly or in

Bahnson Type E humidifier.



# A TOP SPINS...

## but it doesn't do any work

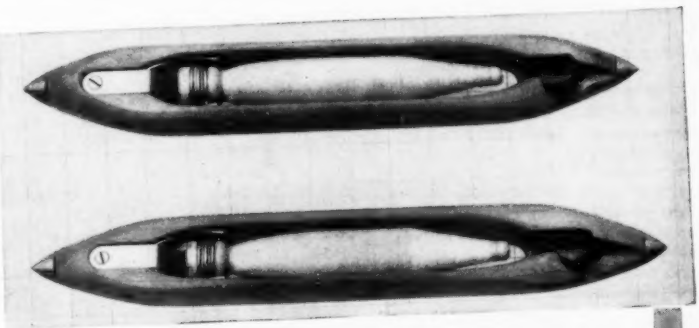
Ragan Rings do a job, and keep on doing it a long, long time—because they have a special hard, brilliant AERO finish. For spinning or twisting, standard sizes or specially designed rings, buy and stick to

*Ragan Rings*

**RAGAN RING COMPANY, the only manufacturer of Textile Rings in the South, 866 Murphy Avenue, P. O. Box 174, Station A, Atlanta, Ga.**
Representatives: John Foard, P. O. Box 574, Newton, N. C. • Arthur Harris, H. B. "Booch" Askew, 443 Stonewall St., S. W., Atlanta, Ga.
Henry Hersey, Dean Thomas, 44 Norwood Place, Greenville, S. C.

*New*

## SHUTTLES FOR DRAPER LOOMS



Major shuttle improvements have long come from Watson-Williams. This time the Shuttle People have introduced two leaders in their field — **shuttles for Draper Looms, fitted with Cast Iron Eyes, to accommodate a longer filling package.**

One of them is 15¼" long, the other a standard 15¾" long. Both are equipped with 8" bobbins. The 15¼" length shuttle is designed to use a short eye to give longer bobbin length. A short eye can also be incorporated in shuttles of other lengths for Standard Draper Looms, and for C and K cotton looms to provide a maximum length bobbin.

**WATSON-WILLIAMS Mfg. Co.**
MILLBURY, MASSACHUSETTS

**SOUTHERN REPRESENTATIVES:**
Watson & Desmond, Box 1954, Charlotte, N. C.
Arthur J. Bahan, P. O. Drawer 779, Greenville, S. C.
John Wyatt, P. O. Box 701, Greensboro, N. C.

**NORTHERN REPRESENTATIVE:**
Guy C. Burbank, 32 Beaconsfield Rd., Worcester 2, Mass.
**WESTERN REPRESENTATIVE:**
Francis B. Wells, 805 Linwood Avenue, La Porte, Indiana

groups with automatic control. Each unit will humidify several thousand cubic feet of room volume at normal conditions.

Construction, except for heavy duty fractional-horsepower motors, is of non-corrosive metals with silver-grey hammerloid finish. Units measure 15½" high by 18¼" diameter, and weigh 55 pounds.

*The Bahnson Co., 1023 S. Marshall St., Winston-Salem, N. C.*

For additional data, request item J-106, using business reply card on pag 230.

## Continuous System for Bleaching up to 1500 lb of Cloth per Hour

For plants handling up to 700,000 yards of cloth per week on a full production or specialty basis, the Du Pont Type 1000 Continuous Bleaching System was developed. Capacity of the new system is 750-1500 lb of cloth per hour and its speed is up to 100 ypm. Practically all types of white goods, goods for dyeing and printing, or colored fabrics in the 3 to 7 yards per pound class can be handled efficiently. Total lapsed time for bleaching is only two hours.

A compact, two-stage range is employed in the system for bleaching in rope form.

After the grey cloth is prepared for bleaching by singeing and desizing, it passes through the first two U-shaped units, where it is thoroughly washed with water, and then through the third U-shaped unit where it is saturated with chemicals. In the case of white goods, the cloth at this stage is saturated with a caustic soda solution; in the case of colored yarns, the cloth is saturated with an alkaline-peroxide solution. After saturation, the cloth passes through a heater tube where it is heated by steam to the proper operating temperature. The cloth is then piled in a J-box and stored until the chemical reaction is complete.

Following the first J-box storage, the cloth is washed twice and again saturated with chemicals—this time, an alkaline-peroxide solution for both white and colored goods. From this second chemical saturator, the cloth passes through a second heater tube, a second J-box storage chamber, and through two final washers. The range is designed to fit in an area 40′ x 18′ x 26′ high and installed as a complete, operating unit and has many features which insure long life and trouble-free performance. All parts of the range which come in contact with the cloth are constructed of stainless steel; all chemical feeds and steam controls are simple in design and easy to operate; and the motor drive is of the variable-speed d-c type for maximum flexibility. In addition, all bearings, squeezers and similar operating parts are of standard size and design to simplify replacement and maintenance.

*H. W. Butterworth & Sons Co., Bethayres, Pa.*

For additional data, request item J-116, using business reply card on page 230.

## New Electrically Lighted Magnifier

A new electrically lighted magnifier is shown here being used to inspect a machine part. The instrument magnifies five times the inspected object, which is flooded with direct light from the 110-volt illuminator handle.

Shown in the foreground are the alternative battery-powered illuminator handle and two accessories included with each instrument without extra cost—a non-illuminating handle and a metal tripod which multiply the magnifier's uses in factory or laboratory.

*Bausch & Lomb Optical Co., Rochester, N. Y. (J-216).*

## Oil for Crepe Soaking of Rayon Skeins or Cakes

A new oil for crepe soaking of rayon skeins or cakes has been developed (Dextrol Rayon Crepe Oil No. 114). A blend of sulfonated oils with free cocoanut oil, it will form a very stable emulsion for use in either machine or tub soaking.

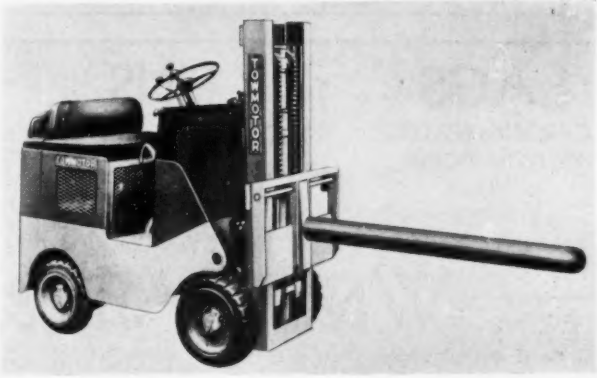
*Dexter Chemical Corp., New York 59, N. Y.*

For additional data, request item J-102, using business reply card on page 230.

## Ram Attachment for Open-Center Loads

Unwieldly "open-center" loads can be handled with ease and safety on the Towmotor Ram, a standard accessory. Suspended from the fork support bar, the ram promotes rapid handling of rolls of cloth or paper, large pipe, and many other heavy

**Fork truck with Towmotor ram attachment for open-center loads.**



## NEW Equipment AND MATERIALS

materials with open centers. Loads can be picked up or deposited at any height within the lifting range. Easily interchangeable with standard forks, the ram can be used with any Towmotor model.

*Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, Ohio (J-215).*

### Plastic-Coated Bobbins Smooth and Tough

An automatic loom bobbin finish that is virtually indestructible has been perfected.

Starting with bobbins of straight grain rock maple, the finish is applied by coating the entire bobbin with a specially developed resin base, thermosetting plastic, to which a catalyst is added for hardening.

Cured slowly by a special process, the finish becomes a permanent, integrated part of the bobbin itself.

Steam setting or chemical conditioning of yarn on bobbins does not affect the finish. Weave troubles such as yarn abrasion and snag due to roughened bobbins are eliminated. The toughness of the finish combined with its smoothness enables the NEB-800 (designation of the plastic-coated bobbin) to resist the "crush" and pull of synthetics even when the filling package is nearing the end of its run.

*New England Bobbin & Shuttle Co., Nashua, N. H.*

For additional data, request item J-110, using business reply card on page 230.

### Pre-Blended Raw Felting Stock

Ready-Mix, a new, pre-blended raw felting stock for the production of uniform, cost-controlled felt, is now available, offering savings to the user in time and money through controlled production, safety of buying, minimizing of inventory and financial problems.

It is delivered ready to use, packed in standard bales. The user needs only to put the stock into his garnett hopper. Being pre-blended, this product does not require the use of mixing or blending equipment. The space and skilled operatives formerly required to select, mix, and blend raw materials can be utilized for other more profitable and productive work.

The hazards and confusion of buying various grades of waste are eliminated with the use of Ready-Mix; once a given grade is agreed upon, the user is assured of constant quality and predetermined cost, at the going proper market level. The price will fluctuate with the market; however, the quality of a given grade remains constant. Lower or higher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As Production Engineers we specialize in the utilization of

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Our list of clients reads like the Blue Book of American Manufacture, and in our files are many expressions as to our service and results accomplished, like the following:

*"They have done an outstanding job for us. I consider them as the outstanding organization in this field."*

*A GREAT FULLY INTEGRATED TEXTILE MILL*

Write for a free copy of "Labor and Management Benefit by Industrial Engineering Principles," and our booklet "A Fair Day's Pay and in return A Fair Day's Work".

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priced grades can be chosen, as the user's needs demand.

*The Railway Supply & Manufacturing Co., 335 West Fifth Street, Cincinnati 1, Ohio.*

For additional data, request item J-108, using business reply card on page 230.

### New Traveler for Large Package Spinning

A new ring traveler has been developed for large package spinning, and the manufacturer has applied for a patent thereon. Named the Wentworth Bal-Ellipsoid, it is, as the name implies, a perfect ellipsoid in shape. The traveler is balanced by having a portion of the metal from the bow area cut out, thereby lowering the center of gravity. In trial runs, it has been successfully operated on the new Saco-Lowell Gwaltney spinning frame.

*National Ring Traveler Company, Pawtucket, R. I.*

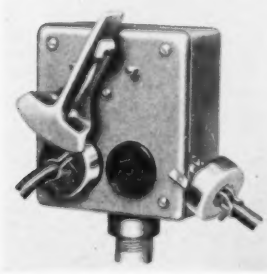
For additional data, request item J-114, using business reply card on page 230.

### Inter-Lock Receptacle Makes Cord Sets Safe

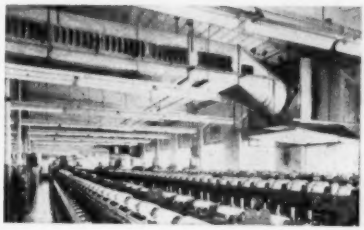
An interlocking receptacle which incorporates a sealed mercury switch that de-energizes each socket before a plug may be inserted or removed, permits use of cord sets for locations which are hazardous. All danger of sparking is eliminated. Mercury switch works on a cam lever which locks cord set caps in position after they are inserted. In the locked position the mercury switch completes the circuit. A simple flip upward of the cam lever tilts the switch, breaks the circuit, and allows cord caps to be pulled out safely.

*Tigerman Engineering Co., 4332 North Western Ave., Chicago, Ill. (J-211).*

**Interlocking receptacle (Tigerman).**

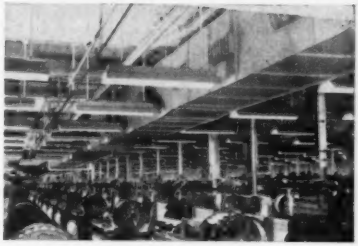



# Certified Climate – 1952



Automatic Airchanger with Gradumatic Humidification

Central Station alone—or with Gradumatic Boosters—or with Refrigeration



Gradumatic Humidification

All with Gradual Acting Psychrostat Regulation

Engineering, Manufacturing, and Installing by Parks-Cramer Company

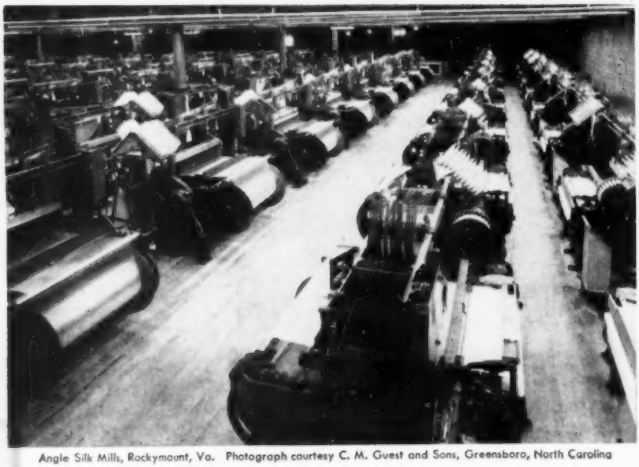
Centralized Responsibility

Specialists in Textile Mill Humidification and Air Conditioning Since 1906

## Parks-Cramer Company

Fitchburg, Mass. Charlotte, N. C.

PARKS Certified Climate



Angle Silk Mills, Rockymount, Va. Photograph courtesy C. M. Guest and Sons, Greensboro, North Carolina

*for the best of reasons*
the textile industry
*prefers*

**NORTHERN HARD MAPLE**

● The reasons why Northern Hard Maple flooring has earned and held the esteem of textile folks are plain. They make sense. First of all, workers like the maple floor. It's *resilient* under foot, and it's bright and cheerful. They feel better at the end of a day's work. Maple is easy to brush clean, it makes no dust, it harbors no dirt, it fights scars, scuffs and dents. It's easy to re-surface and it lasts for years. Oil-soaking doesn't affect its tough strength. The MFMA mill-mark on Northern Hard Maple guarantees its dimensions, its genuineness of species and its grade. See Sweet's (13k-Ma), or write—

**MAPLE FLOORING MANUFACTURERS ASSOCIATION**
Suite 591, Pure Oil Bldg., 35 East Wacker Drive
CHICAGO 1, ILLINOIS

**FLOOR WITH *NORTHERN* HARD MAPLE**
*BEECH AND BIRCH*


## NEW Equipment AND MATERIALS

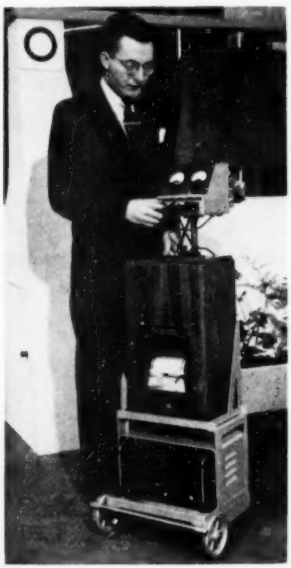
### On-the-Frame Measurement of Yarn Diameter

A photoelectric instrument for recording the variations in diameter of yarn while it is being made on a spinning frame offers the following advantages: faults which are not usually obvious until the yarn is woven may be detected and corrected with a minimum of delay; a rapid check on yarn quality is available in the form of a coefficient of variation or irregularity index; a large number of spinning spindles may be tested without loss in production or yarn so that sampling errors are minimized and the usual delay between spinning and testing is eliminated.

Made specially for the Linen Research Association, Belfast, N. Ireland, the instrument, which is called the "Linra" Photo-Electric Yarn Irregularity Gauge, can be used for any natural or synthetic staple spun yarn.

A photocell and amplifier circuit are used to measure the diameter of yarns while spinning, or, if required, while being drawn past the photocell

**"Linra" Photo-Electric Yarn Irregularity Gauge (Dawe Instruments).**



head by any unwinding mechanism. The results are presented either as a continuous trace on a recording milliammeter, which immediately shows any periodic fluctuations, or, with the instrument damped, as two meter readings, one giving the mean diameter and the other the deviations from this mean, integrated continuously over a period of about five seconds.

The equipment is designed as a mobile unit, adjustable to operate on any standard spinning frame.

*Dawe Instruments Ltd., Hanwell, London, England.*

For additional data, request item J-117, using business reply card on page 230.

### Casablancas Drafting for Platt Roving, Spinning Frames

Platt Bros. (Sales) Ltd. has been licensed to supply the Casablancas system of high drafting in the United States on their latest roving and spinning frames. This license now makes available to mills in this country a wide choice of high drafting arrangements on the Platt MS-2 roving frame and on the M-1 ring spinning frame.

*Atkinson, Haserick & Co., 211 Congress St., Boston, Mass. (U. S. Agents for Platt Bros.).*

For additional data, request item J-105, using business reply card on page 230.

### Permanent Anti-Gas Fader For Dyed Acetate Fabrics

Hartofume C, a new gas fading inhibitor in liquid form, is a permanent anti-gas fader which provides a complete range of gas fading protection for dyed acetate fabrics. This protection is unaffected by washing, dry cleaning or stripping.

It is substantive to cellulose acetate fibers and, therefore, may be applied to the cloth directly in the dye bath. Other advantages are:

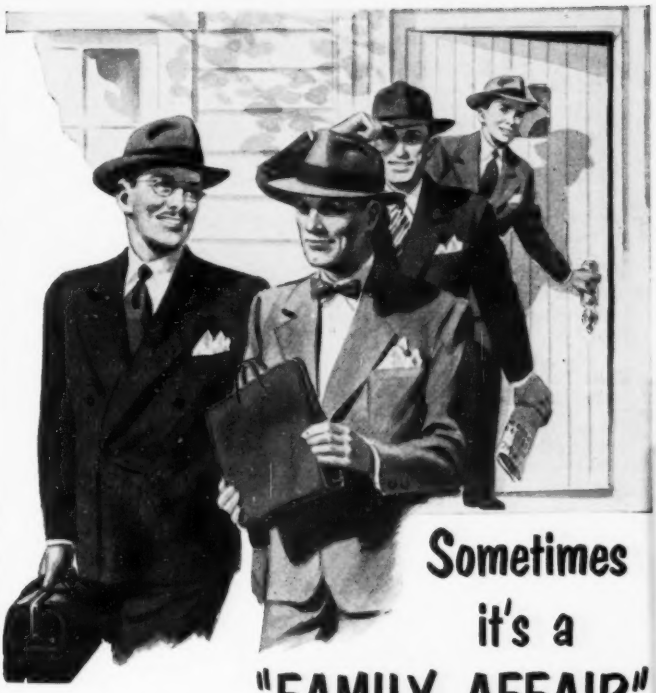
It disperses readily in water to give stable, milky emulsions.

It needs no additional solubilizers for dispersion in water.

It may be applied in jigs, dye boxes, circulating liquor machines, and by padding.

It is not removed from the cloth by stripping agents and, when redyeing, no additional inhibitor is required.

It does not affect the light fastness

Sometimes it's a "FAMILY AFFAIR"

Though they all come from the same house . . . one may be a lawyer, another a doctor, a business executive, and a scientist. When each is a success individually, the whole *family* has a reputation for success.

The world-wide reputation of the house of Anheuser-Busch is like that . . . built by all of its divisions and departments, though each is a specialist in its own right.

The Corn Products Department of Anheuser-Busch is such a specialist . . . with special people and special products devoted entirely to the needs of the Textile Industry. Its technical staff has had notable success in solving problems for textile manufacturers; its advice and facilities are yours for the asking, without obligation.

Making friends . . . through performance and service . . . has been the *business* of Anheuser-Busch for more than a century.

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CORN PRODUCTS DEPARTMENT

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CHARLOTTE, N. C. 1112 JOHNSTON BLDG.
NEW YORK, N. Y. 33rd & 12th Ave.




*For further information use Handy Return Card, Page 230*

of most acetate and direct dyes.

It does not affect the shades of dyestuffs so that no allowance need be made in matching shades.

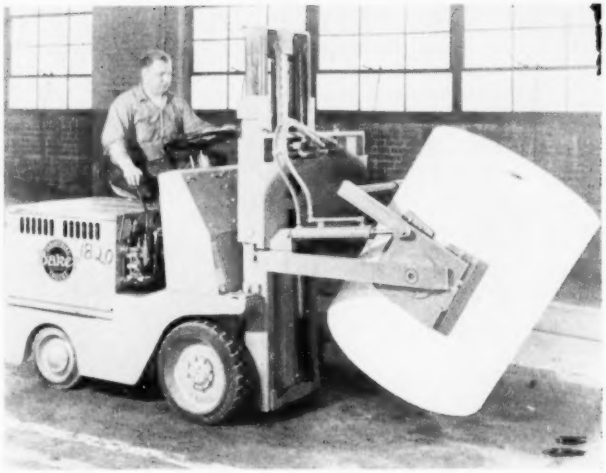
*Hart Products Corp., 1440 Broadway, New York, N. Y.*

For additional data, request item J-101, using business reply card on page 230.

### Roll Clamp Attachment for Fork Trucks

A quickly detachable roll clamp attachment for fork trucks is designed to pick up and stack cylindrical objects either horizontally or vertically. Cloth rolls, etc., from 1½ to 3 feet in diameter can be handled with the device which rotates 90 degrees in a vertical plane. Clamping pressure may be adjusted by the operator for each type of material handled.

*Baker-Raulang Co., Baker Industrial Truck Div., 1230 West 80th St., Cleveland 2, Ohio (J-210).*



**Baker fork truck fitted with roll clamp attachment.**

### Concrete Hardener Stops Floor Sanding

Flintcrust Liquid lengthens the life of concrete floors by case-hardening the surface, sealing and binding the concrete into a tough surface. It also makes it resistant to the penetration of acid, grease, oil, and water. Sanding, dusting, and the usual break-up of the floor which follows are eliminated. The concrete hardener is flushed on just like water, does its job immediately, and traffic need not be interrupted.

*Flexrock Co., 3653 Cuthbert St., Philadelphia 4, Pa. (J-212).*

### Dehumidifier Features Automatic Control

Less power is required for operation of the Walton Aqua-Sorber Dehumidifier since it operates only when necessary rather than at timed intervals. An automatic control that is activated by moisture content of the atmosphere is provided. Other features include: maximum air flow, easy removal of water container, and a hose connection readily accessible for permanent automatic water removal through drain piping. 1/5 hp motor.

*Walton Laboratories, Irvington, N. J. (J-217).*

### Bushing Permits Control of "Vari-Pitch" Sheave from Motor Bearing Side

A new type of "Magic-Grip" bushing for Allis-Chalmers' stationary-control, wide-range "Vari-Pitch" sheaves makes possible quick and easy installation or removal of the sheave and permits mounting it on the shaft so that the adjusting control mechanism is either toward the motor bearing or away from it.

The bushing consists of two split-

ONCE USED, ALWAYS SPECIFIED!
EVER-DEPENDABLE
TATEM
SELECTED HICKORY
PICKER STICKS
For the strong, smooth stroke at the heart of your loom, TATEM selects only the finest hickory to insure perfect whip. TATEM cuts, seasons and finishes this hickory to insure perfect performance. TATEM — the industry standard for 84 years.
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PICKER STICKS · PARALLEL PLUGS · SWEEPSTICKS · CONNECTORS and OTHER LOOM PARTS
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EASTFORD, CONNECTICUT
SOUTHERN REP. — GREENVILLE BELTING CO., GREENVILLE, SOUTH CAROLINA
NORTHERN REP. — TATEM SALES COMPANY, EASTFORD, CONNECTICUT

tapered sheaves, one within the other. When drawn together with the locking screw, the bushing sleeve is contracted on the shaft and the outer sheave is expanded against the discs simultaneously to effectively lock the entire mechanism with all working clearances eliminated. Stresses due to starting, stopping, or sudden overloads do not affect sheave setting. Spacing of discs to produce different pitch diameters is accomplished with adjusting screw while locking screw is in loosened position. New sheaves with this bushing are 20% lighter.

*Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. (J-206).*

### Fast-to-Light Direct Dyes for Cotton and Rayon

For dyeing cotton and rayon, a new line of fast-to-light direct dyes known as Arilite Dyes has been introduced. These dyes have excellent penetrating and leveling properties. Because they have no affinity for acetate, they are useful for cross-dyeing rayon-acetate blends. Fabrics dyed with Arilite Dyes require no special aftertreatment.

Arilite Dyes designated by the letter "U" are particularly valuable for dyeing fabrics which are to be treated with resin finishes. Shades produced with these dyes exhibit minimum change when treated with resin finishes. Lightfastness before and after resin treatment is outstanding. Washfastness after resin treatment is improved.

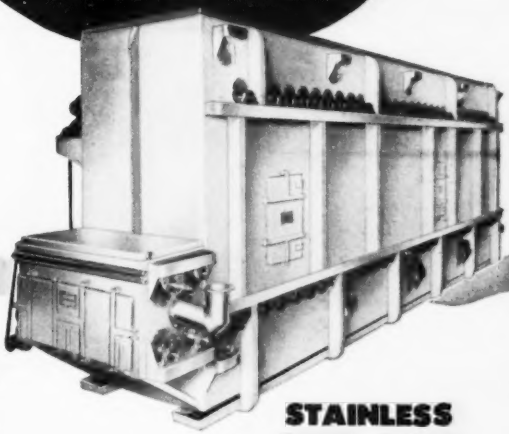
*Interchemical Corp., Textile Colors Div., Hawthorne, N. J.*

For additional data, request item J-109, using business reply card on page 230.

### All-Electric Steam Cleaner

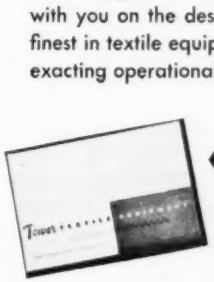
Faster and more effective cleaning of processing equipment, machine tools, windows, and light fixtures in the plant during regular working hours can be accomplished with the improved "Speedylectric" Steam-Jet Cleaner Model JC-30. Similar in general design and construction to the original machine, it operates at higher pressures (to 200 psi). Hot dry steam alone or with solvents, soap or detergents atomized under finger-tip control of the operator blasts the object to be cleaned at jet speeds up to 1200 feet per second. Easily portable. Can be used indoors for cleaning and sterilizing without


INVESTIGATE
Tower
TEXTILE EQUIPMENT



STAINLESS STEEL AGER

The cost conscious textile man, concerned with the purchase and operation of production equipment, will find it to his advantage to contact Tower engineers. Tower engineers will consult with you on the design and installation of the finest in textile equipment — to meet your most exacting operational requirements.



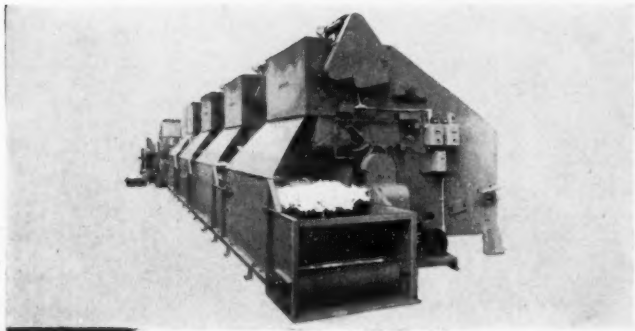
*Write for free booklet on Tower Textile Equipment*

IRA L. GRIFFIN & SON
Charlotte 1, North Carolina
Southern Representative

Tower Iron Works
*Established 1835*
50 BORDEN STREET, PROVIDENCE 3, RHODE ISLAND

*Yarn Uniformity starts with Accurate, Automatic*

# PROCTOR BLENDING EQUIPMENT



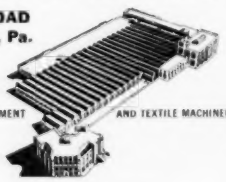
One mill executive said recently, "If your blend is off, you're licked in the whole mill." How true that is! That is why Proctor engineers have spent so much time and money perfecting up-to-the-minute blending equipment that mixes fibers *thoroughly, accurately and automatically.* In many installations of Proctor automatic blending equipment—variance in the blend is held to less than 1%. This accuracy (which never could be achieved by manual blending) means that the last yarn made from a blend is exactly the same as the first.

Thousands and thousands of pounds of stock are passing through Proctor systems every day—with accuracy being reflected in improved yarn uniformity. When can we discuss your requirements?

*Much Proctor drying equipment and textile machinery is covered in full or in part by patents and patents pending.*

**PROCTOR & SCHWARTZ • INC •**

**610 TABOR ROAD**
**Philadelphia 20, Pa.**



MANUFACTURERS OF INDUSTRIAL DRYING EQUIPMENT AND TEXTILE MACHINERY

## NEW Equipment AND MATERIALS

flooding the working area or disturbing operators at nearby machines. Fire and explosion hazards eliminated since unit is electrically operated.

*Livingstone Engineering Co., 100 Grove St., Worcester 5, Mass. (J-213).*

### New Textile Courses for Home Study

A group of eight new home study courses for personnel employed in the textile industry includes units for loom fixing technicians, finishing and dyeing technicians, hand weaving and designing, cotton carding and spinning technicians, cotton warping and weaving technicians, rayon throwing and warping technicians, rayon warping and weaving technicians, and textile mill supervisors.

The courses are available both to individual students and to employers who wish to provide specific training for key personnel.

*International Correspondence Schools, Scranton, Pa.*

For additional data, request item J-104, using business reply card on page 230.

### Package Unit Boiler in 16 Sizes

The horizontal fire-tube boiler is the basic component of the "Powermaster" automatic packaged steam generator. Its three-pass internal furnace construction is one reason for the unit's high efficiency and economical operation. Voriflow burners for light oil, heavy oil, and commercial gas fuels as well as dual combination burners modulate with uniformly high efficiency between 30% and 100% of full load rating.

Combustion gases travel through the central combustion tube, reversing their flow back through the lower bank of tubes, then again toward the rear branching through two lateral banks of tubes. Front and rear covers are readily removable for inspection. The cylindrical combustion chamber assures complete combustion within the furnace. The boiler feed and condensate handling system is optional. A completely integrated control system and inter-

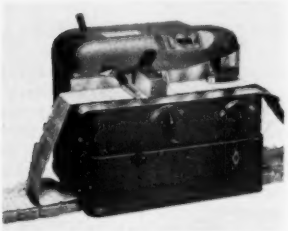
locking safety devices are an integral part of each unit.

Built in 16 sizes from 15 hp to 500 hp for pressures up to 250 psi. Heat transfer of 4.5 to 5.0 sq ft per boiler horsepower.

*Orr & Sembower, Inc., Morgantown Road, Reading, Pa. (J-207).*

### Rotary Tag and Label Imprinting Machine Doubles Marking Speeds

Designed to reduce marking costs and increase marking speeds is "The American 400" rotary tag and label imprinting machine which prints by spirit duplicating process. Copy to be imprinted is typed on any standard typewriter. Special carbon-like paper backing transfers to a "master sheet" the characters to be imprinted. This printing master can be prepared by unskilled personnel in a few seconds and be proofread directly at a glance, reducing set-up time substantially. Printing rate, 430 tags per minute. Turn knob to change from tags to labels or from tags to labels of different sizes.



**"American 400" tag and label imprinting machine.**

*American Tag Co., 150 Cortlandt St., Belleville 9, N. J. (J-204).*

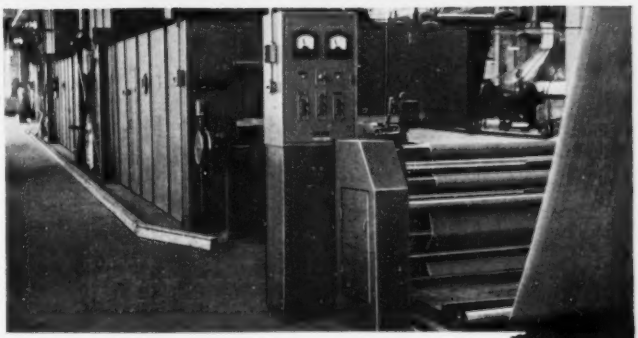
### Water Repellent Lets Fabrics Breathe

A water repellent to protect fabrics against rain and moisture is known as "Rain Rem." The new colorless liquid compound possesses a special silicone base which waterproofs individual fibers without sealing open spaces between fibers or between threads in the weave. This renders fabrics water repellent and at the same time permits air to pass through the treated material.

The water repellent can be applied by brush, spray or dip. It is packaged in a 12-ounce "spray top" can and also in a 1-pint can for home or small industrial use. One and 5-gal-


*Fabric Quality is Guaranteed with an up-to-the-minute*

**PROCTOR OVERFED PIN TENTER**

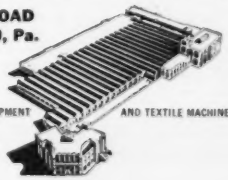


Resin impregnated fabrics are dried on the Proctor overfed pin tenter without danger of creasing or migration—and delivered with the ultimate in shrinkage control. The relaxed drying which insures top fabric quality and a full hand is made possible by three features engineered into every Proctor installation. 1. An overfeed mechanism, which makes it possible to overfeed fabric to the pins in any percentage from minus 5% to plus 35% and have the cloth evenly and uniformly deposited. 2. A sensitive guiding mechanism which provides accurate guiding up to and in excess of 100 yards per minute. 3. A balanced drying system which permits maximum drying speed without fabric distortion. Available in either vertical or horizontal type—Proctor overfed pin tenters guarantee quality results in a wide range of fabrics—suitings, laces, tricots, specialty goods and standard fabrics. Write for complete information.

*Much Proctor drying equipment and textile machinery is covered in full or in part by patents and patents pending.*

**PROCTOR & SCHWARTZ • INC •**

**610 TABOR ROAD**
**Philadelphia 20, Pa.**



MANUFACTURERS OF INDUSTRIAL DRYING EQUIPMENT AND TEXTILE MACHINERY

## NEW Equipment AND MATERIALS

lon cans and 55-gallon drums are available to industrial users.

Rain Rem does not change the appearance or texture of treated materials in any way. Fabrics can be laundered, dry cleaned and pressed without destroying its effectiveness.

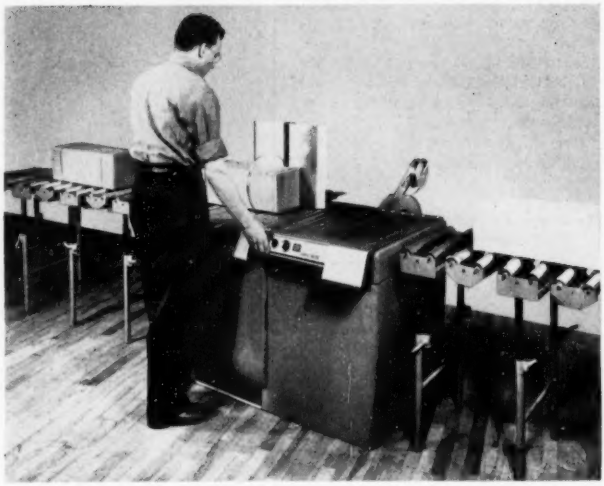
*Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.*

For additional data, request item J-113, using business reply card on page 230.

### Power-Driven Strapping Machine

A power-driven strapping machine designed to speed flat steel strapping operations and reduce operator fatigue produces strap joints by spot welding. Its 31-inch table height permits the machine to be installed in standard-height conveyor systems.

Packages of many different sizes can be accommodated and there is no limit to the amount of strap that can be fed or the amount of slack that can be taken up. Packages approach the machine on a roller conveyor from the right; after strapping they leave the machine from the left.



**Acme Steel power-driven strapping machine for packaging.**

Skilled labor is not required, manufacturer claims. Machine is electrically powered and electronically controlled. Can be furnished to accommodate strap sizes in widths of ⅜, ½, ⅝ and ¾ inches and in thicknesses up to .023 inches. Counting mechanism provided to facilitate record keeping for each shift.

*Acme Steel Co., Chicago, Ill. (J-301).*

### Temperature Regulators for Heating or Cooling

Series "V," a new line of self-operated temperature regulators, is designed in either direct or reverse acting type for heating and cooling applications utilizing steam, liquids, gases, and all fluids not corrosive to brass. Features: thermostatic system may be easily replaced without removing valve from piping system; tight shut-off; liquid expansion operating principle insures positive uniform throttling action; overload protection; dial adjustment; reduced maintenance; compact, sturdy unit. Sizes ranging from ¼" to 4"; temperatures from 25 F to 275 F with a 50-degree range of adjustment.

*Farris Stacon Corp., Palisades Park, N. J. (J-203).*

### Corrosion-Resistant Coatings for Duct Systems

"Ricwilite" coatings are specially formulated to protect ventilating and duct systems, piping, etc., against extremely corrosive conditions in all


HOW ANDERSON SHIELDS INCREASE SPINNING ROOM EFFICIENCY

Spinning rooms using Anderson Shields save time and money, and prevent disruption when unnecessary breaking, chipping, and splitting of bobbins and spools is avoided. In a year's time these items alone can amount to a surprising sum . . . Insist on Anderson and get the best protection meta shields afford . . . Watch your spinning room efficiency increase!

TEXTILE SHIELD CO., INC.

*Metal Protection for Wood Turnings*

J. N. ANDERSON, *Treas.*

LAWRENCE, MASS., U.S.A.

types of industry with a tough, impervious film which is resistant to attack by corrosive acids and alkalis, salt water, rust, and weathering.

Two types are presently available: Ricwilite 1060 Phenolic Resin Coating is of the baking or heat-hardening type—when baked at 350 to 400 F it hardens to form a chemically inert, insoluble, corrosion-resistant coating, hard and tough, glass-like in appearance, yet flexible and elastic: Ricwilite 7100 Phenolic Resin Coating is of the cold-setting type which is cured at room temperatures by the addition of a catalyst just prior to application by brush or spray.

*Ric-Wil Plastic Coating & Mfg. Corp. 1290 Euclid Ave., Cleveland 15, Ohio (J-208).*

### New Fire Extinguisher Has Improved Dry Chemical

A fast-flowing dry chemical fire extinguisher now available is, according to the manufacturer, designed to eliminate faulty operation due to clogging and contains an improved dry chemical which is said to not only add to the free-flowing qualities of the chemical but also to elim-

**The Redi-Flo fire extinguisher.**

inate the necessity of large quantities of moisture-proofing ingredients. 6% more sodium bicarbonate is contained in the 5-lb extinguisher because of the smaller percentage of moisture-proofing ingredients required. Designated the Redi-Flo extinguisher, it features one-hand operation. Locking mechanism prevents accidental discharge. Approved by Underwriters' Laboratories. Available in 3, 5, and 10 lb units.

*Stop-Fire, Inc., 125 Ashland Place, Brooklyn, N. Y. (J-302).*


Now is the time to *modernize*

HUMIDIFICATION

systems with

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HUMIDIFIERS

Install one or one hundred for economical spot, booster or plant-wide humidification

Specify Walton Humidifiers as an integral part of your modernization program for low cost, easily installed humidification. For a single small area or plant-wide service, Walton is the practical answer. The Walton system is simple to install, requires no expensive ducts, air lines or compressors and is easily relocated as plant layout changes. Uniform distribution can be maintained in areas of low or high ceilings, and filter-protected models are available for high efficiency operation under all lint and dust conditions.

**Modern Walton Humidification**

**SAVES YOU MONEY!**

**Get all the facts today — mail coupon for complete details**

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Irvington 11, New Jersey BIO

Send copies of the booklets checked below:
"HUMIDIFICATION FOR KNITTING"
"HUMIDIFICATION FOR TEXTILES"

NAME_____

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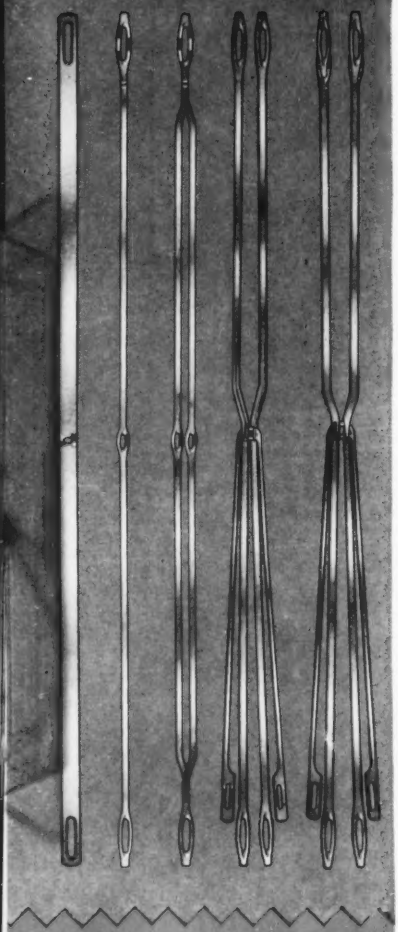
Stehedco and Southern



1-1-13

There is a specific type of heddle in all sizes and weights, for every type of fabric. Be sure to consult our Field Engineers for guidance in selecting the most practical eye for the special warp thread you are using. They are conversant with the mill problems and understand the importance of equipment and product performance . . . Just phone, write, or wire and they will be ready to serve you.

# What the TEXTILE MILLS are doing

**Akom Knitwear, Inc.,** was recently chartered for the manufacture of knit underwear. Louis E. Fanning, 20 Burston St., Hempstead, L. I., N. Y., is attorney and representative.

J. H. Garside and L. L. Croland, president and treasurer, respectively, have purchased controlling interest in in the **Associated Dyeing & Printing Co.,** 25 Sixth Ave., Paterson, N. J.

**Chicopee Mills** recently purchased the property at 47-49 Worth St., New York, N. Y., and will consolidate all New York activities there.

**Cluett, Peabody & Co.'s** research laboratory at Troy, N. Y., has been sold to the Catholic Central High School and will be converted for school service.

**Sapphire Corp.,** Lansdale, Pa., has been sold to **Will E. Cusick Co., Inc.,** Keyport, N. J.

**Denton Sleeping Garment Mills, Inc.,** Centreville, Mich., has been acquired by new interests headed by Joseph G. Hirsch, an official of Rutledge Manufacturing Co. Operations are expected to continue as before.

New dyeing equipment is being installed at the Durham, N. C., mill of **Erwin Mills, Inc.,** for the manufacture of colored sheeting.

**Firestone Textiles,** Gastonia, N. C., have installed additional rayon processing equipment for increased output.

**Glenwood Knitting Mill,** Raleigh, N. C., has been secured under lease by new interests, headed by McBryde Albright of Burlington, N. C. Operations will be continued, mainly for manufacture of men's hosiery.

The steam boiler capacity at **Globe Dye Works** has been nearly doubled through the installation of a furnace boiler with a top capacity of 45,000 lb of steam an hour. The other boilers have a combined capacity of 40,000 lb per hour.

**Globe Knitting Works** have been purchased by **Aetna Industrial Corp.** Walter W. Weismann, chairman of the board of Aetna, is the new president at Globe; Robert G. Davidson was made vice-president in charge of production; L. R. Raemer, treasurer; George R. Teich, vice-president in charge of finance; Robert Zeidman, secretary; and Dorothy T. Armantrout, assistant secretary.

**Gropper Knitting Mills, Inc.** is moving its mill and offices from New York City to 23-01 22nd St., Long Island City, N. Y., where an expansion program is under way.

Knit outerwear will be manufactured by the recently chartered **Grand Knitting Mills, Inc.** Annette London, 276 Fifth Ave., New York, N. Y., is attorney and representative.

**Herbert Mills, Inc.,** has leased a 25,000 sq ft building at Marion, S. C., for production of sweaters, knitted swim trunks, and T-shirts. Later the plant expects to do silk screen process printing of knitted outerwear.

Additional knitting machines and auxiliary equipment have been installed at **Hoburt Hosiery Corp.,** Denton, N. C., for increased capacity.

**Hockanum Mending Co.,** Rockville, Conn., made up of former employees of the liquidated Hockanum division of M. T. Stevens & Sons, is equipped to do commission burling and mending.

**Holeproof Hosiery Co.** is planning construction of a one-story addition to its mill in Cullman, Ala.

**Holyoke (Mass.) Textile Manufacturing Co.,** newly organized by Myron H. Ackerman Associates, is being operated for manufacture of worsted interlinings.

**Hughes Woolen Mill,** Camden, Maine, was recently sold at public auction.

**A. D. Juilliard & Co.** is reported planning a new cotton mill at the site of its present Aragon, Ga., mill, with weaving machinery and certain other equipment to be transferred from one of the firm's northern mills.

**Lisle Mills, Inc.,** has begun operations at 930 Fourth St., Allentown, Pa., leased from Julius Kayser & Co.

**Line-Made Hosiery Mills,** Hickory, N. C., have expanded their operations to Taylorsville, where about 35 people are being employed.

**Lorraine Manufacturing Co.,** 12

# Stehedco and Southern

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you really see through the business of weaving superior fabrics, for it is the shape and polish of these all important eyes which will determine the quality of your finished product. It is at this point the Steel Heddle Mfg. Co., has concentrated its efforts in order to give you a heddle with an eye so scientifically designed all chafing and jagging is reduced to an absolute minimum.

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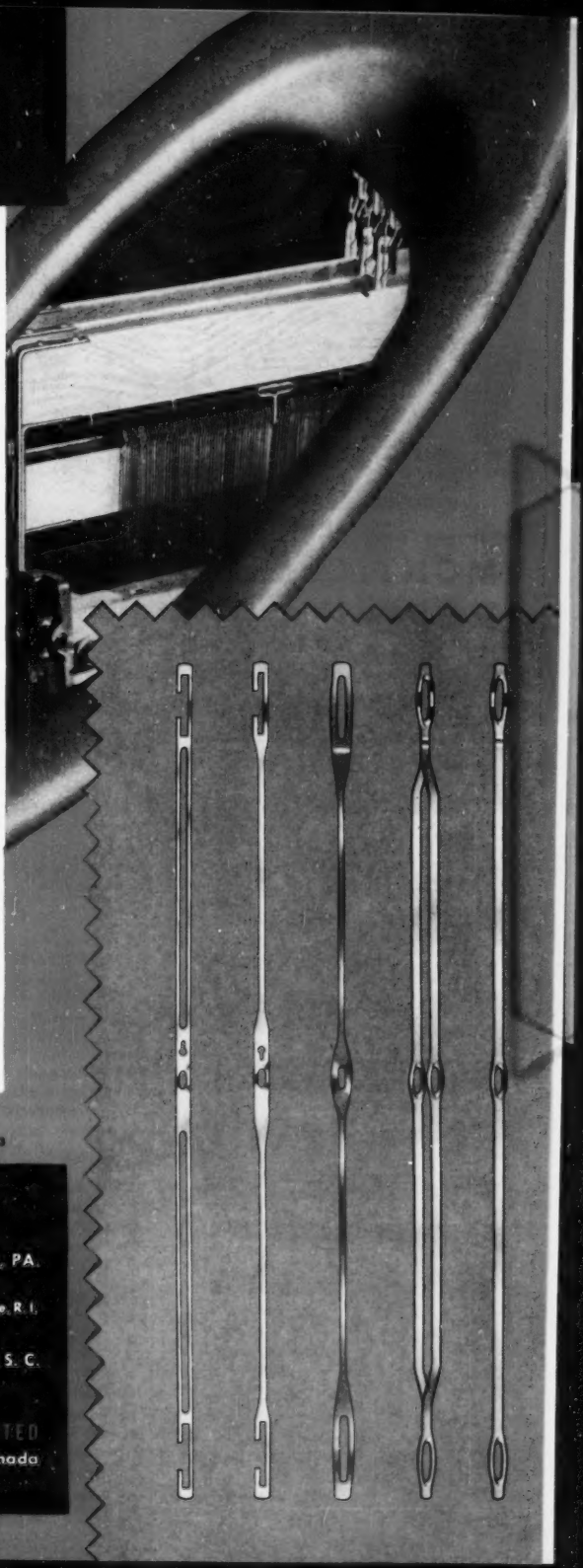

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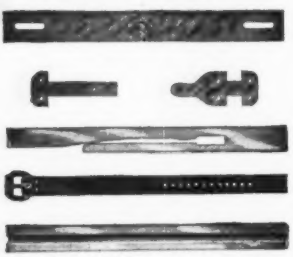

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## *What the* TEXTILE MILLS *are doing*

South 12th St., Philadelphia, Pa., has installed new twisters and auxiliary equipment, for increased production.

Guntersville, Ala., has been selected as the site of a hosiery mill, operated as the **Marshall Mills Corp.** Between 200 and 300 persons will be employed.

**Mayfair Mills,** Spartanburg, S. C., have plans to replace all of the present 895 E Model Draper looms with the latest X-2 models, according to reports.

**Moser Hosiery Mill** was recently incorporated at Burlington, N. C., by B. A. Moser, Doane Moser, and W. S. Foster, officers of Dura-Red Hosiery Mills.

**Mylan Finishing Co.,** 49-61 Keen St., Paterson, N. J., has been formed by Milton H. Mandel to dye and finish acetates, rayons, and nylons. The plant formerly known as Lynn Dyeing & Finishing Co., Inc., has been taken over for this purpose.

**Nashawena Mills** and **William Whitman Co.** have merged, with Nashawena being liquidated. The merger is expected to accomplish certain economies in operations and make available a larger working capital.

**Naumkeag Steam Cotton Co.** is moving its Danvers Bleachery Division from Peabody, Mass., to a new mill at Whitney, S. C., where all finishing operations are being consolidated.

**Nyl-De-Chine Corp.,** Lansdale, Pa., was recently organized for specialty rayon and synthetic fiber processing. Syma Starer, Colwyn, Pa., is attorney.

**Oneita Knitting Mills** have construction underway of a one-story building at Andrews, S. C. The mill is now occupying a building under lease.

**Pacific Mills,** worsted division, are reported to be planning increased operations at their Lawrence, Mass., plant.

**Pepperell Manufacturing Co.** has started construction of a sheet factory at Abbeville, Ala., allowing the firm to streamline its Pepperell, Ala., finishing plant which has included sewing operations also.

Spinning and weaving operations have been discontinued at **Powdrell & Alexander, Inc.'s,** Danielson, Conn., mill. Manufacture of shirtings, dress goods, and curtain fabrics will be concentrated in the New Bedford plant of **Gosnold Mills Corp.,** the firm's subsidiary.

Ownership of **Queen Dyeing Co., Inc.,** Providence, R. I., has been acquired by **Comfy Manufacturing Co.,** Baltimore, Md. Queen Dyeing was a subsidiary of the United States Finishing Co.

**Rex Mills, Inc.,** Ranlo, N. C., has announced plans for a one-story research laboratory at the mill.

**Robbins Mills, Inc.,** Aberdeen, N. C., has been merged with **Hego Fabrics, Inc.,** New York City. Both firms will retain present names and organizations, and there will be no change in production at the Aberdeen mills.

**Ruby Ring Hosiery Mills,** now operating at Lenni, Pa., have changed their name to **Aston Mills, Inc.**

**Salisbury Textiles, Inc.,** is now operating in the former mills of Northboro (Mass) Woolen Mills, Inc.,

**Sea Island Knitwear, Inc.,** recently chartered, will manufacture outerwear. Harold Sacks, 341 Cedar St., Valley Stream, L. I., N. Y., is attorney and representative.

**Sheble & Wood Yarn Corp.,** Salamanica, N. Y., has completed an expansion and modernization program at the mill.

**Alexander Smith, Inc.,** is planning a modernization and improvement program at its Yonkers, N. Y., mill, to provide for increased efficiency in operations.

**Snow White Bleachery,** Royersford, Pa., has been sold to the **Pottsville Bleaching & Dyeing Co.,** Port Carbon, Pa. Major improvements are planned, including installation of new machinery.

Construction of a $50,000 addition to the mill of **Swift Manufacturing Co.,** Columbus, Ga., has begun. It will be used as a waste house.

The recently organized **South Pacific Textile Mills** have production under way on a one-story mill at 792 South Stanford Ave., Los Angeles,

## What the TEXTILE MILLS are doing

Calif. Mac A. Radom is vice-president and treasurer. Woolen knit goods, including jersey fabrics, will be manufactured.

**Sterling Dyers, Inc.,** has leased space at 900 Passaic Ave., East Newark, N. J.

Employees at the Appleton Co. division of the Dunean group of **J. P. Stevens & Co., Inc.,** recently reached one million man hours without a lost time accident.

**Sun-Set Cord, Inc.,** braided cords, has moved from Providence to 358 Ellsworth Ave., New Haven, Conn.

**Tennessee Rock Hosiery Mill, Inc.,** Manchester, Tenn., has arranged for construction of a one-story mill, to be occupied under lease.

**Textron Southern, Inc.,** has announced a construction program in the Greenville, S. C., area, to cost about 5 million dollars. Included are a warehouse at nearly $250,000 and a tricot knitting plant to cost 2½ million dollars, both near Williamston. The Peerless Mills plant, recently purchased, will receive a major addition to double its capacity.

**Trenton Cotton Mills, Inc.,** Gastonia, N. C., has been purchased by interests headed by J. W. Abernethy, Newton, N. C., and A. Alexander Shuford, Jr., Hickory, N. C.

**United Rayon Mills,** Elberton, Ga., are now known as the Elberton Mills, division of United Merchants and Manufacturers, Inc. This is an organizational change which does not affect the personnel or policies of the mill. Sixty-four mill houses were recently sold to employees.

**Vanity Fair Mills, Inc.,** Reading, Pa., has announced an improvement program to cost over $25,000.

An extensive research program is under way at **Visking Corp.,** North Little Rock, Ark., for development of new products.

**Woodside Mills, Inc.,** has consolidated the textile operations of its Ottaray and Haynsworth plants at Anderson, S. C. Equipment of Ottaray has been moved to Haynsworth, to which an addition has been made.

**Woonsocket Worsted Co.** has liquidated its plant in Rhode Island but

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## Textile Supply Co.

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**LINCOLNTON, NORTH CAROLINA**


## *Incentives Work at Waldensian*

What do we mean, in industry, by incentives?

The boss thinks of it in terms of "more work"; labor in terms of more pay—and in truth, financial incentives mean "pay according to production." But the modern concept of incentive is primarily concerned with any and all means to *induce* the operator to say to himself: "I want to produce the best I can"—and mean it.

Before making our time studies for our incentive plan we had, as most mills do, set up twelve machines to each knitter regardless of type or style. We found, in order to give each operator an even work-load, it was necessary to increase some as much as *100%*. On the other hand, on one group of machines they were reduced by one machine. On the average the increase work-load was 47%.

We had also devised a plan where we would pay the knitter and fixer a quality bonus at the end of each week. This was to have amounted to 10% of the knitter's pay and 20% of the fixer's pay. On each group of machines they have a quality bracket to meet for receiving premium of quality bonus. Also it was our intention to pay for all socks produced regardless of the classification and no docking for bad work.

When we applied the knitters on the increased work-loads it took approximately a month for all of them to come up to this increased assignment. You might imagine what happened to our quality at this time. None of them was earning the weekly quality bonus, therefore did not realize how much it meant to them financially.

At the end of six months when we still were not getting the quality production, we reduced the work-loads by one or two machines, which cut their pay considerably. When this was done they were told that they would get their machines back the next week if their quality improved substantially. This did the trick, as only one or two operators had their machines reduced the second week. The knitters finally saw what it meant to them financially by producing quality work.

You can see from what I just told you that gains are not accomplished immediately; they require a lot of good judgment, constant hard work, lots of patience, attention to details, and individual service to each and every operator. In short, maintenance of the plan after installation is as important, if not more important, than the installation itself.

It always grieves me to hear of some incentive plan failing. This is a misnomer as incentives do not fail, it is a management failure! In my opinion they have failed for the following reasons:

1. Management was not sold on incentives in the first place.
2. The outside consultants did not do their job as they should have.
3. The foremen and supervisors were not leaders enough to sell their employees on the idea of producing more.
4. The standards were not maintained as working conditions changed.

Abstract of address by Julius M. Ramsay, Jr., of Waldensian Hosiery Mills, Valdese, N. C., before Southern Hosiery Manufacturers Association, Roanoke, Va., September 5, 1952.

will continue operations in its plant at Laurens, S. C., according to Frank Farnell, vice-president.

**Wanskuck Co.**, Providence, R. I., has merged with Oakland (R. I.) Worsted Co., under the first noted name.

**Washington (N. J.) Hosiery Mills, Inc.**, recently organized, has acquired a one-story building to be equipped for a knitting mill.

**Washington Manufacturing Co.**, Tennille, Ga., has an expansion program planned which will cost about $175,000.

**Aspinook Corp.** has sold its finishing and printing plants at Jewett City, Conn., and Adams, Mass., to **William Whitman Co., Inc.**

**Zor-Knit Mills, Inc.**, headed by Joseph P. Zornik, has constructed a one-story mill at Fort Lauderdale, Fla., for manufacture of two- and three-bar tricot, tulle, and netting.

Textile Industries

Volume 116 Number 10

OCTOBER, 1952

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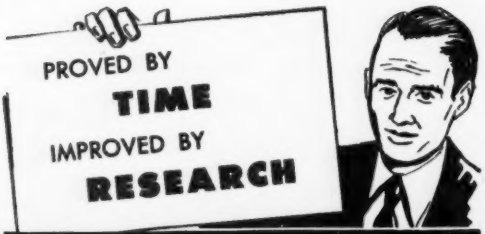


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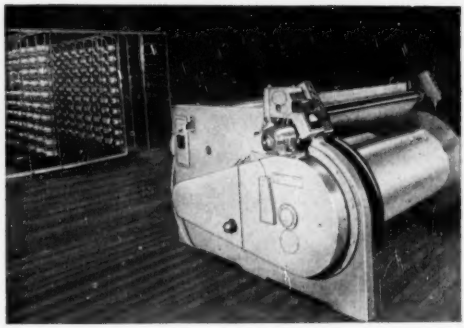

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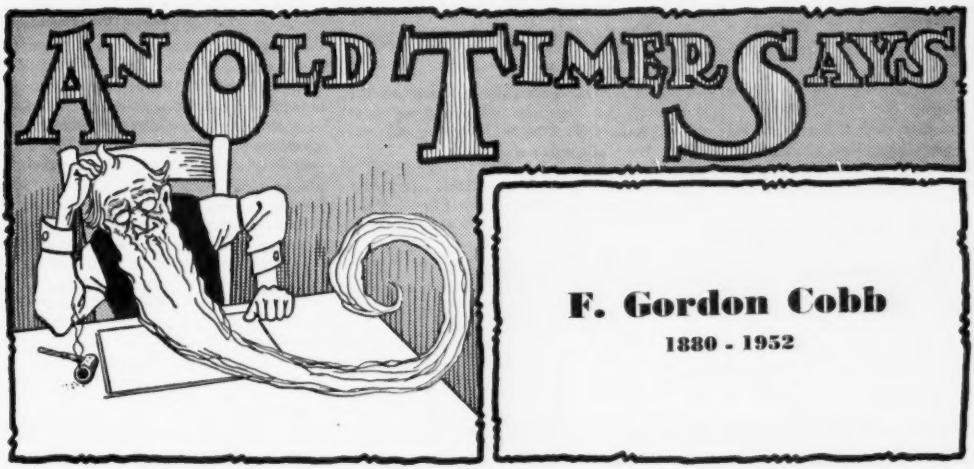


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**1880 - 1952**

In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

OVER THIRTY years ago a prominent executive in a textile plant conceived the idea for the OLD-TIMER page. Since that time, he has continuously prepared the stimulating messages which you have been reading. He never missed an issue.

In our publication of March 1947 he celebrated his 25th anniversary as the author of the OLD-TIMER page. Textile executives young and old paid tribute to him and to the inspiration he has offered them through the years.

That man has passed to his reward. OLD-TIMER is gone. And with his passing goes from this magazine the most consistently popular feature it has ever published.

His style and his page have been unsuccessfully imitated on many occasions. It was only natural that any effort at imitation fail. His columns could not be matched because of the sincerity of the man behind them. Truly, he found the sunshine of living in helping his brother along.

OLD-TIMER'S sound philosophy will be missed by textile men of all ages and positions. His influence and teachings are of lasting nature and benefit. And though he will no longer be with us, we feel that his philosophy, which has been so thoroughly engendered in the textile industry, will be perpetuated as a living memorial to him.

Many of you knew him. Some of you knew him as OLD-TIMER. But generally his reading public did not. The secret is now out.

F. Gordon Cobb was OLD-TIMER.

# Personal NOTES
## ABOUT MEN YOU KNOW

The American Thread Co. has announced the appointment of **Walter Saturday** as assistant superintendent of the Tallapoosa, Ga., plant. **Frank Jenkins** succeeds Mr. Saturday as twister room overseer.

**Homer White,** superintendent of the Sycamore, Ala., plant of Avondale Mills, was recently honored by his fellow workers at a testimonial dinner.

**W. A. Laney,** formerly with Duplan Corp., is now superintendent of Carolina Fine Fabrics, Inc., Hickory, N. C.

**Daniel Worth,** formerly with Mooresville Mills, has joined the research and development staff at The Chemstrand Corp., Decatur, Ala.

Dan River Mills has announced the appointment of Wellington S. McMann as assistant manager of the quality control department, and **Robert W. Willett** as head of the control laboratories.

**Cleveland L. Adams,** formerly technical director of the Lanett (Ala.) Mill Division of West Point Manufacturing Co., has accepted the position of head of the School of Textile Technology, Alabama Polytechnic Institute, Auburn, Ala. He is also research principal with the Auburn Research Foundation.

**Mr. Adams**

The Controllers Institute has announced the election of **Michael Campagna,** William Skinner & Sons, as president of the Springfield Control. **Edward C. Hunt,** West Point Manufacturing Co., was elected president of the Boston Control; **Theodore R. Peary,** Pacific Mills, treasurer; and **Edgar R. Coddington,** Sayles Finishing Plants, Inc., a director. **Adams Rhodes,** Cheney Brothers, is secretary of the Hartford Control. Elected directors in their respective areas are: **John R. Adamson,** Riegel Textile Corp., Chattanooga Control; **Earle L. Brown,** Fieldcrest Mills, Inc., Richmond Control; **E. G. Howe,** Hamilton Cotton Co., Ltd., Hamilton, Ont.; and **James A. Taylor,** Cook & Co., Inc., Memphis.

**Miss Myrl Statham,** personnel director of Dundee Mills, Griffin, Ga., upon graduating from night school recently won the W. S. Kell Award, presented annually to the woman graduate of the Atlanta Division, University of Georgia, with the highest average for her college career.

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Combed Peeler or Sak, 10's-90's Single
Combed Peeler or Sak, 10's-100's Ply
Carded Peeler, 8's-30's Single

THREAD DIVISION LAWRENCEBURG, KENTUCKY

ALSO SYNTHETICS AND WORSTED YARNS

AMERICAN & EFIRD MILLS, INCORPORATED
Mount Holly, North Carolina • W. H. SUTTENFIELD, Vice-President and Sales Manager
*Successors to American Yarn & Processing Company and Efird Manufacturing Company*

MOUNT HOLLY, N. C.
Mr. C. E. Wood
Miss E. B. Abernathy
Mr. T. J. Davis

HIGH POINT, N. C.
Mr. E. J. Holbrook

CHATTANOOGA, TENN.
Mr. H. W. Davenport
728 James Bldg.

BOSTON, MASS.
Mr. L. T. Howick
222 Summer Street

PHILADELPHIA, PA.
Mr. Wm. Montgomery
2101 N. Broad Street

ALBEMARLE, N. C.
Mr. A. S. Winget

CHICAGO, ILL.
Wood & Hutchinson
220 W. Adams Street

GASTONIA, N. C.
Mr. T. C. Smotherman

NEW YORK, N. Y.
Empire State Building
Room 2806

ANNISTON, ALA.
Mr. Horace Frierson

**John C. Westkage** was recently promoted from loom fixer to overseer of weaving at Fabyan Woolen Co., Medway, Mass.

**Oscar F. Ferguson,** assistant foreman of the cloth inspection department at the Sheeting Mill of Fieldcrest Mills, retired July 31 after more than fifty years of continuous service. **John W. Arnall,** assistant superintendent of the Finishing Mill, has been given the additional responsibility of the supply room, the bleaching-cloth finishing, and piece dyeing departments. **Marvin E. Clifton,** formerly second hand, was promoted to assistant foreman in the sheet cutting and sewing department.

**Joseph E. Johnson** has retired as superintendent and assistant manager of Grier and Gordon Mills, North Wilkesboro, N. C.

**H. L. Pruitt,** general manager of Haynsworth Mills, Anderson, S. C., retired on August 1.

In addition to his duties as general manager, **Robert Patterson** has been elected vice-president and a director of Holly Knit, Inc., Mount Holly, N. C. He replaces Milton Hinkis, resigned.

The Huntsville Manufacturing Co. has announced the appointments of **Harry Davis** as carding overseer and **George Archer** as overseer of weaving. Mr. Archer has been second hand in the weave room for the past eight years. Mr. Davis was previously with PeeDee Manufacturing Co.

**Raymond Tukey** is now superintendent of the Blackstone, Mass., plant of Lonsdale Co.

## Obituaries

**Alfred Knup,** 58, vice-president of Helwig Dyeing Corp., on June 8.

**John T. Hughes,** 64, owner of Hughes Woolen Co., Camden, Me.

**Eliot Farley,** 67, chairman of the board and research director of Textron Inc., July 31.

**James H. Arbogast,** 68, president and treasurer of Monroe Silk Mills, August 7.

**G. H. Jones,** 74, retired textile executive.

**Ernest M. Henning,** 66, general manager of the knitting department of Wiscassett Mills Co., August 16.

**Allen L. Mills,** 64, secretary-treasurer of Paula Cotton Mills.

**S. B. Platt,** superintendent and designer for Southern Worsted Mills, Inc.

**Joseph Seyer,** 71, president of Seyer Silk Dyeing & Finishing Co.

**J. P. Draper,** 73, president of Draper Top Co., August 21.

**George F. Bahan,** 72, sales manager for Bahan Textile Machinery Co.

**Gordon Pannill,** 62, president of Pannill Knitting Co., on August 3.

**Benjamin Elsas,** 80, former president and board chairman of Fulton Bag and Cotton Mills, August 26.

**Thomas W. Koch,** 61, director of advertising and sales promotion, Shellmar Products Corp., August 18.


NON-FLUID OIL

TRADE MARK REGISTERED

**Imitated But Not Equaled**

NON-FLUID OIL is by far the most widely used lubricant in the Textile Industry . . . and no doubt is the most imitated product in the textile lubrication field.

Because of this, we caution against use of grease mixtures sold as being the equivalent of NON-FLUID OIL, or so-called viscosity type oils which will not remain in or on the bearing. It makes little difference from whom purchased, they all have the same drawback of failing to give positive lubrication on split second demand and are messy and wasteful.

NON-FLUID OIL provides cleaner and better lubrication at less cost per month. Write for free sample and descriptive bulletin.

**New York & New Jersey Lubricant Co.**

**292 Madison Ave., New York 17, N. Y.**

WORKS: Newark, N. J.

SOUTHERN DISTRICT MANAGER: Lewis W. Thomason, Jr., Charlotte, N. C.

WAREHOUSES: Atlanta, Ga. — Birmingham, Ala. — Charlotte, N. C. — Chicago, Ill. — Columbus, Ga. — Detroit, Mich. — Greensboro, N. C. — Greenville, S. C. Providence, R. I. — St. Louis, Mo.

*NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly to use.*

# Orr SLASHER Cloth

*With Special Chemical Treatment*

Something New and Better

● Slasher Cloth is an important maintenance item in a cotton mill. With the introduction of ORR Slasher Cloth with Special Chemical Treatment, many of the problems which have pestered the slasher room foreman have been eliminated.

The slasher room foreman, in order to satisfy the superintendent and the cost department, must have available a Slasher Cloth that:

1. Dresses the yarn properly.
2. Holds its width. No shrinkage.
3. Maintains level production performance.
4. Starts fast — lasts long.

ORR Special Treated Slasher Cloth maintains uniform dressing properties, resists bacteria and steam degradation, maintains dimensional stability. Discuss your Slasher Cloth problem with your ORR representative.

*Distributed by*

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Box 1393, Greenville, S. C.

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**THE ORR FELT & BLANKET CO.**

PIQUA, OHIO, U. S. A.

*Industrial Woolens by Orr*

STARTS FAST — LASTS LONGER


# SUPPLIERS News

## WHAT THEY ARE DOING

The plant of **Victor Electric Products, Inc.,** has been purchased by **Allis-Chalmers Manufacturing Co.,** and will be used for the firm's "Texrope" sales, engineering, and production facilities. A field group to handle all service, repairs, breakdowns, and adjustments for general machinery division customers was recently organized, with the following regional service supervisors: B. F. Ureda, Chicago; A. S. Hill, Cleveland; D. T. Thomas, New York; C. P. Suykerbuyk, Atlanta; E. G. Kime, Dallas; and D. W. Seagrave, San Francisco. William E. Scott was made sales representative in the Charlotte district of this division.

The **Aluminum Co. of America** has announced the appointment of Harry L. Smith, Jr. as staff manager in the product sales division. Succeeding him as manager of sheet and plate sales is W. T. Mitman, formerly in the Washington, D. C., sales office.

A plant expansion program is underway at **Aquex Development and Sales Corp.** which is expected to more than double present production of textile finishing resins.

A new molecular still and a new esterfication unit have been installed at the Harkness & Cowing plant of **Arnold, Hoffman & Co., Inc.,** as part of the firm's expansion program.

**Atlas Powder Co.** has opened an office at 3272 Westheimer Road, Houston, Tex. Allen V. Riley, Jr., has been assigned there as technical sales representative.

Donald K. Woodard, recently with American Thread Co., has re-joined **Barnes Textile Associates, Inc.,** as a vice-president. He was a member of the organization from 1918 until 1938.

Construction of a new plant at Akron, N. Y., for production of zirconium and hafnium sponge metals, and an expansion program for greater production of "Fiberfrax" fiber, have been announced by **The Carborundum Co.** "Fiberfrax" fiber will be marketed by the Refractories Division of the firm. William J. Kingsley has been appointed assistant general sales manager of Carborundum.

**Chemical Manufacturing Co., Inc.,** sales agent in this country for industrial chemicals produced by Imperial Chemical Industries, Ltd., London, Eng., has moved to larger quarters at 444 Madison Avenue, New York 22, N. Y.

**Dilts Machine Works,** Fulton, N. Y., division of the **Black-Clawson Co.,** now has a complete coating laboratory available for pilot plant scale trial purposes, and production of commercially equivalent coated products.

John W. Normington succeeds Charles Helmold, resigned, as service engineer for **The Bullard Clark Co.**

**Mr. Normington**

His territory will be Connecticut, Rhode Island, and western Massachusetts.

Harmon Howorth, manager of **Celanese Corporation of America's** Rock Hill, S. C., plant, has been promoted and will move to the firm's New York offices. Alexander Rose succeeds him at Rock Hill. The chemical division has opened a branch office in Charlotte, N. C., at 1603 Liberty Life Building, with William Milheim as sales representative for the southeast district. Celanese has joined with Compania Colombiana de Tejidos, a cotton textile firm in Colombia, in the establishment of a viscose rayon producing company known as Viscosa Colombiana, S. C.

**Dixie Size and Chemical Co.,** Columbus, Ga., was recently organ-

ized for manufacture of warp sizing compounds and finishing chemicals. Cason J. Callaway, Jr., formerly with Callaway Mills, is president and treasurer; Walter P. Hope, previously with A. E. Staley Manufacturing Co., is vice-president. Plant manager and chemist is W. S. Fair.

Erwin N. Darrin has retired as chairman of the board of directors of **Draper Corp.** He will continue as a director.

Charles P. Culp has been made Atlanta regional sales manager of the finishes division of **E. I. Du Pont de Nemours & Co., Inc.** Formerly assistant manager of trade sales, he succeeds William T. Banning, retired.

Mr. Culp

Mr. Banning

Donald V. Bauder is now assistant manager of trade sales; Lawrence M. Davis, assistant manager of sales development, and Robert J. Nast, paint store superintendent. Eric J. Monaghan, assistant to the director of sales, dyes and chemicals division, has retired. This division has announced also that its main west coast office has been moved to 845 East 60th St., Los Angeles, Calif. A. J. Mease is manager.

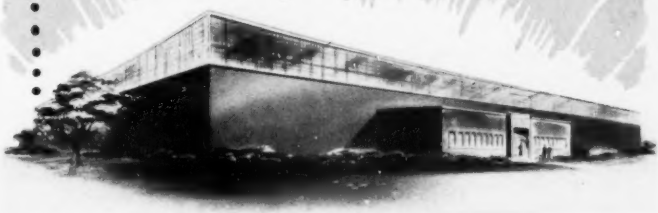
James E. Williams has been made southeastern district representative for the **Durkee Atwood Co.'s** industrial division, with headquarters in Atlanta, Ga. The company also announces the establishment of a warehouse stock of industrial V-belts in that city.

Federal Adhesives Corp., Federal Latex Corp., Resinous Chemical Manufacturing Co., and Adex Manufacturing Co., have jointly announced the formation of **Federal Resinous Chemicals, Inc.,** 210 Wythe Ave., Brooklyn, N. Y. The new firm will specialize in the production of textile processing chemicals, such as synthetic resins, detergents, etc.

William Gross, George Buchalter, Bernard Hoffman, Russell Chaskin, and Joseph Frankel, formerly with


GRAND OPENING

OCTOBER 31—NOVEMBER 1



*You're invited...*

**to Atlantic Steel Company's**

**Warehouse Division**

**Open House and Trade Show**

THERE'LL BE BIG DOINGS in Atlanta come October 31 and November 1.

That's when our brand-spanking new warehouse and facilities make their debut.

In celebration of this big event, we are holding a two day *Open House* and *Trade Show* for our customers, suppliers and other friends.

You'll see exhibits of the latest uses of stainless steels for the dairy, textile, pulp and paper industries and hospitals—as well as chemical, automotive and food industries. And there'll be exhibits of the products our warehouse customers make of expanded metals, cold drawn steel, and copper, as well as carbon steels.

There'll be a playground and movies for the kids and refreshments for all.

We want you to come and see for yourself how our new warehouse and facilities will enable us to serve our increasing number of customers better than ever.

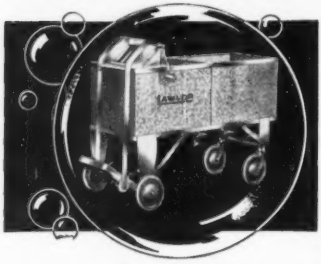
***Service In Step With Southern Progress***

WAREHOUSE DIVISION

**Atlantic Steel Company**

ATLANTA, GEORGIA • EMERSON 3451

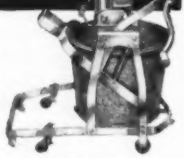
# LAWLOR MOPPING TANKS



**Lead the Field in RUGGEDNESS and SERVICE**

8 styles and sizes of all steel, acetylene welded tanks • 2 or 3 compartments • 30, 60 or 65 gallon capacities • Hand or foot pressure wringers • Perforated roll wringers • Special drain shut-offs • Hot dipped, galvanized chassis and frames • Rubber tired, cadmium plated steel wheels.

## LAWLOR MOP WRINGERS



*Copied but never Duplicated!*

**EASIEST** turning wringer made: there are bearings at ends of rollers.

**EASY** to bring rolls together; the foot lever is perfectly balanced.

**EASY** to move wringer: self-adjusting front casters raise metal feet from floor when you're ready to go.

The LAWLOR No. 2 accommodates any standard round, galvanized pail up to 16-quart capacity. Net weight of wringer—23 pounds.

LAWLOR No. 6 TWIN is like the No. 2 Wringer in general construction, but accommodates two pails.

**Write for Catalog of Mopping Tanks, Wringers, Floor Scrub Wax-Polishing Machines for every kind and size floor.**

**S. C. LAWLOR CO.**

*Quality Floor Equipment for 50 Years*

**121 N. Aberdeen St., Chicago 7, Ill.**


## SUPPLIERS News — WHAT THEY ARE DOING

Hartford Textile Corp., have joined the New York sales force of **Firestone Plastics Co.**, and will specialize in Velon film. Kenneth L. Edgar is now manager of manufacturers' sales of both films and sheetings; Charles F. Edelman, staff trade manager of sales of Velon film; E. H. French, Jr., manager of the contract printing division; and Fritzi Reckendorf, stylist of printed films. Keith Scanlan represents the film division in the Cleveland area; Samuel Briscoe, Chicago; Frank Bates, New Jersey-Baltimore. J. Gurney Wilson has been made southwestern sales representative, with headquarters in Dallas; John Kavanagh, St. Louis; and Ronald Malarney, New England.

Robert H. Poulton has been made manager for the technical sales division of **Flexible Tubing Corp.**

**Food Machinery and Chemical Corp.** has announced the election of Joseph B. Cary as chairman of the executive committee. Ernest Hart was elected an executive vice-president responsible for the operations of the chemical divisions; Benjamin C. Carter, executive vice-president, mechanical divisions. J. C. Vernon succeeds Mr. Hart as president and manager of the Niagara chemical division.

The Twenty-Five Year Club of **Foster Machine Co.** held its annual meeting on June 20. Roland C. Mack received a forty-five year emerald service award, and awards were given for forty, thirty-five, thirty, and twenty-five years of service.

Tom R. Moore, sales service manager of the Antara division of **General Dyestuff Corp.** since 1950, has been named assistant to the vice-president and general sales manager of the firm.

John R. Gilmartin succeeds Howard K. Porter as general sales manager of the Hyatt Bearings Division of **General Motors Corp.** Mr. Porter is now assistant to the general manager on special assignments.

**Groz and Beckert,** Ebingen, Germany, celebrated their 100th anniversary on August 29. In these years the firm has produced as many as 25,000 different types of latch needles, spring beard needles, etc. Groz and Beckert are represented in this country by the **Alfred Hofmann and Co.,** West New York, N. J.

The executive offices of **Heyden Chemical Corp.** were recently moved to 342 Madison Ave., New York. These offices are also headquarters for the sales department of its subsidiary, The American Plastics Corp., the Heyden medical department, and for the Heyden market development, technical sales, and advertising departments.

**Hooker Electrochemical Co.** has opened a sales office at One North La Salle St., Chicago, with Charles Y. Cain district sales manager and Donald McKechnie office manager.

W. H. Hobbs is now representing **Lestershire Spool and Manufacturing**

### Veeder-Root's Southern Headquarters

**Veeder-Root, Inc.,** has recently opened sales and service headquarters near Greenville, S. C., as a permanent southern base. The home office of the firm is in Hartford, Conn.

**Co.** in the middle Atlantic territory. Clifford E. Lathrop has been appointed district manager for the New England and eastern New York State area, succeeding J. H. Windle, Jr., now sales manager.

**Link-Belt Co.** has appointed Kenrick M. Hickman assistant sales manager of the Ewart plant in Indianapolis, and Carl Rudman manager of agricultural sales. Mr. Hickman succeeds H. M. Bowman, now at the Chicago plant.

Thomas T. Patton has succeeded L. W. Bishop as president of the **Hunt Loom & Machine Works.** T. Henry Wood has become vice-president and

**Mr. Patton**

**Mr. Wood**

sales manager; William E. Henderson, vice-president and treasurer; and Horace C. Whitmire, secretary and assistant treasurer.

John G. Muehlhausen has been appointed assistant treasurer of **William Iselin & Co.**

Frank N. Speller, authority on the subject of corrosion, has become an associate member of **Management Counselors, Inc.,** 37 Wall St., New York.

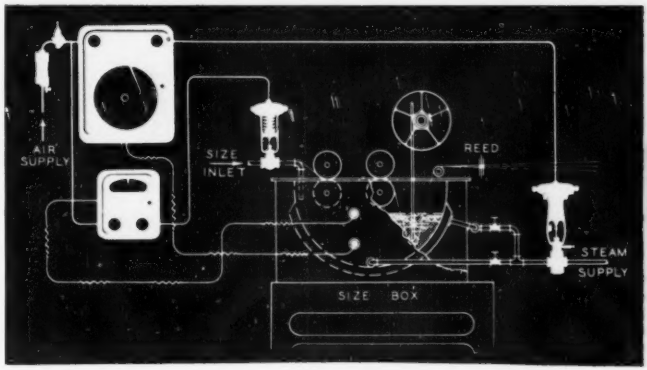
**Miller Motor Co.** now has a fleet of "College of Cylinder Knowledge" mobile units on the road whose purpose is to provide knowledge on the proper use, maintenance, operation, and testing of air and hydraulic cylinders. These converted buses are rotated among company representatives who take them to industrial plants by pre-arranged appointments.

C. L. Peterson has been made general sales manager of the industrial division of **Minneapolis-Honeywell Regulator Co.,** succeeding W. H. Steinkamp. J. M. Douglas is now valve sales manager for the central region.

A stock box division in its Long Island City plant and a warehouse in the New York City garment and millinery district were recently an-


Masoneilan

**Automatic Size Box Temperature Control Maintains Uniform Size, Insures Yarn Uniformity**




If sizing standards are to be maintained and successively reproduced, the sizing agent must be kept at a constant temperature to avoid variations in viscosity and insure proper coverage of the yarn.

Masoneilan Size Box Temperature Control gives you accurate temperature control assuring uniform size resulting in fewer yarn rejects and "seconds".

**MASONEILAN ADVANTAGES**

- **Accurately Controlled Temperature**
  Maintains the size temperature automatically.
- **Cuts Production Cost**
  Reduces steam consumption to a minimum; insures uniform product.
- **Records for Uniform Production Runs**
  Chart record for reproducing similar runs and a permanent check on quality.

It will pay you to investigate Masoneilan Controls for your mill. Write for catalog.

MASONEILAN

**MASON-NEILAN REGULATOR CO.**

**1194 ADAMS STREET, BOSTON 24, MASS., U.S.A.**

*Sales Offices or Distributors in the Following Cities:* New York • Syracuse • Chicago St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland Cincinnati • Detroit • San Francisco • Salt Lake City • El Paso • Boise Albuquerque • Charlotte • Los Angeles • Denver • Appleton • Louisville Corpus Christi • New Orleans Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

# Test moisture content *in 3 seconds* with Moisture Register!

*Model PD-1*

*Model K-2*

You get *accurate*, almost instant, moisture content readings in **wool, cotton, rayon, nylon—practically any type of textile—** when you use Moisture Register Model PD-1 or Model K-2.

Either model gives you "on-the-spot" readings with guaranteed accuracy. They're simple to operate, require no technical knowledge or skill, weigh only 6 pounds, easily portable.

Model PD-1 tests textiles in loose or compressed forms with 3" penetration. Model K-2 tests cones, beams, rolls and similar forms.

**ONE YEAR GUARANTEE!**

Use one of these instruments **FREE** for 10 days. No obligation! Prove for yourself that Moisture Register will help you maintain higher standards, iron out production headaches, add to your reputation as a manufacturer of quality products. Fill out coupon, mail today!

**ELECTRONIC MOISTURE REGISTER**

**MOISTURE REGISTER CO.**
**1510 W. Chestnut St., Dept. T1, Alhambra, Calif.**

☐ Please send me, *without obligation!* for 10-day free trial, Model ..... for use on .....

Enclosed find purchase order to cover trial period.

NAME
TITLE
COMPANY
STREET
CITY
STATE

☐ Please send me information on Moisture Register for use on .....


## *Quick Quiz on Fire Safety for Every American Employee*

Increased employee interest in fire safety problems is an important key to reduction of the nation's annual $700,000,000 fire loss, according to Paul W. Eberhardt, president of Fire Protection Institute, national fire safety research organization.

To focus attention on the employee's role in fire protection and prevention, in connection with Fire Prevention Week (October 5-12) the Institute has released a 20-question "Quick Quiz on Fire Safety" for use by business and industrial workers throughout the country.

The text of the "Quick Quiz," copies of which are available from the Institute, 670 Fifth Avenue, New York City, follows:

| | Yes | No |
|---|---|---|
| 1. Am I as careful about fire safety at work as I am at home? | ( ) | ( ) |
| 2. Is the place where I work inspected regularly for fire hazards? | ( ) | ( ) |
| 3. Do I know the location of the fire extinguisher nearest my working area? | ( ) | ( ) |
| 4. Is there an adequate supply of Underwriters'-approved extinguishers, considering the lives and property involved? | ( ) | ( ) |
| 5. Has any one ever shown me how to choose and use the right extinguisher? | ( ) | ( ) |
| 6. In case of fire, has any one been assigned responsibility for emergency measures? | ( ) | ( ) |
| 7. Are all fire exits kept clear at all times and do I know where they are? | ( ) | ( ) |
| 8. Has detailed fire safety material ever been given to me, showing me what to do in an emergency? | ( ) | ( ) |
| 9. Are "No Smoking" rules observed in all hazardous areas? | ( ) | ( ) |
| 10. Where smoking is permitted, is there an adequate supply of ash trays? | ( ) | ( ) |
| 11. Do I know where the nearest fire alarm box is? | ( ) | ( ) |
| 12. Do I know how to report a fire by phone? | ( ) | ( ) |
| 13. If the clothing of a fellow employee caught fire would I know what to do? | ( ) | ( ) |
| 14. Have I ever been asked to participate in a fire drill? | ( ) | ( ) |
| 15. Are the flammable materials used where I work stored and handled safely? | ( ) | ( ) |
| 16. Do I know where the nearest fire hose is located? | ( ) | ( ) |
| 17. Do I encourage those who work with me to practice fire safety principles? | ( ) | ( ) |
| 18. Does my company publication occasionally carry material on fire safety? | ( ) | ( ) |
| 19. Am I confident my employer is doing everything that should be done to protect all employees from fire? | ( ) | ( ) |
| 20. Could I get another job promptly if the place where I work should be destroyed by fire? | ( ) | ( ) |

(Fourteen is the key number. If an employee can't answer yes to at least 14 questions, he will face definite danger if a fire should break out where he works.)

nounced by **National Container Corp.**

Aubrey M. Cowan, formerly with West Point Manufacturing Co., has joined the **New York and New Jersey Lubricant Co.** as sales representative in Alabama and Georgia.

Formerly sales engineer, John B. Sullivan is now eastern sales manager for **Photoswitch, Inc.,** Cambridge, Mass.

The Fiber Glass division of **Pittsburgh Plate Glass Co.** has announced the appointment of Robert A. McLaughlin as director of sales. He has been with the firm since 1940.

**Owens-Corning Fiberglas Corp.** has announced the appointment of Dr. Alfred Marzoccni as manager of the textile chemistry section of the Fiberglas Textile Products laboratory at Ashton, R. I.

**National Carloading Corp.** has established freight offices in Winston-Salem and Charlotte, N. C., Greenville, S. C., and Chattanooga, Tenn., to provide the textile industry on the

west coast with convenient and complete less-than-carload transportation service from southern textile mills. Managers are A. J. Ghirardini, James E. Kennedy, Charles W. Gamble, and Joseph P. Hogan, respectively.

The following changes of the sales department of **Pittsburgh Steel Co.** have been announced: Allison R. Maxwell, Jr., has been elected a vice-president; Marvin J. Bair, general manager; Norman J. Froelich, assistant general manager in charge of the sale of rods, manufacturers wire, merchant products, and chain link fence; John C. Cercone, in charge of sheets and semi-finished products.

Quaker Rubber Corp., division of **H. K. Porter Co., Inc.,** has established a stock carrying branch warehouse and sales office at 2360 N. W. Quimby St., Portland 10, Ore., under the direction of Milton M. Clark, district manager. R. R. McCracken and J. G. Young, salesmen, will help service the area.

RCA Victor division of **Radio Corp. of America** has announced the appointment of Harold T. Sawyer as manager of industrial products sales in the engineering products department.

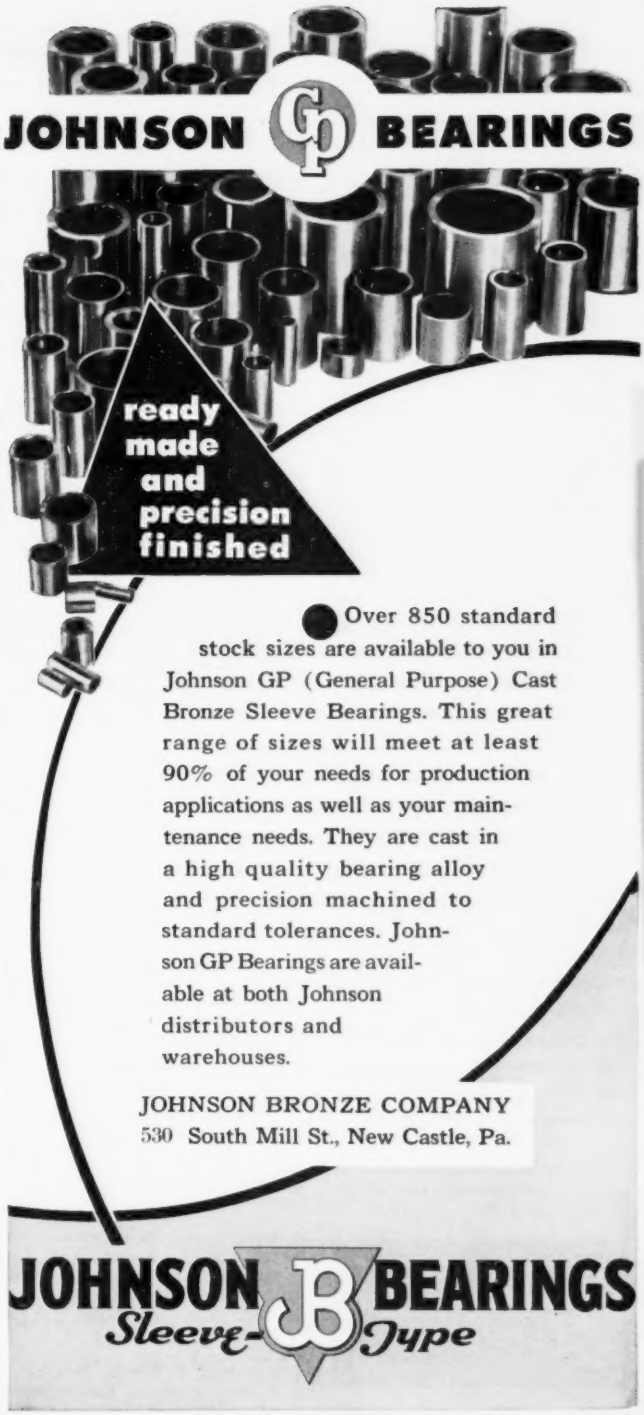
**Reading (Pa.) Testing Laboratories** are now represented by Hosiery Mill Accessories, Inc., in Canada, New England, the Mid-West, and Western states. The laboratories manufacture products for the full-fashioned knitting machine.

Harold A. Sweet, formerly with General Dyestuff Corp., has joined **Refined Products Corp.,** Lyndhurst, N. J., as director of the industrial division.

An extensive line of synthetic resins and allied chemicals is being made available to the textile industry by **Reichhold Chemicals, Inc.** The announcement was made at the opening of a new plant in Charlotte, N. C.

**Arthur D. Little, Inc.,** has opened an office in the Railway Exchange Building, St. Louis, Mo., with John R. Kirkpatrick in charge.

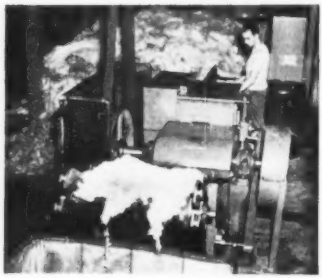
Mrs. Harriet Sargent Hildreth was recently elected president of **S. G.**


JOHNSON GP BEARINGS
ready made and precision finished
Over 850 standard stock sizes are available to you in Johnson GP (General Purpose) Cast Bronze Sleeve Bearings. This great range of sizes will meet at least 90% of your needs for production applications as well as your maintenance needs. They are cast in a high quality bearing alloy and precision machined to standard tolerances. Johnson GP Bearings are available at both Johnson distributors and warehouses.
JOHNSON BRONZE COMPANY
530 South Mill St., New Castle, Pa.
JOHNSON JB BEARINGS
Sleeve-Type


For further information use Handy Return Card, Page 230

3 Efficient

**TAYLOR-STILES CUTTERS IN A SINGLE PLANT**



In the plant of a leading commercial processor of textile waste, three Taylor-Stiles cutters make it possible to cut several types of waste simultaneously.

While their No. 415 Cutter, shown above, is cutting nylon waste, their No. 115 machine can be cutting tops.

The No. 012 (formerly known as "Giant Junior") was the first Taylor-Stiles fiber cutter purchased by this concern. Its versatility and efficiency led to the purchase of the larger volume cutters that now handle the very considerable and varied production of the plant.

*Send for description of the Taylor-Stiles cutter to meet your cutting requirements economically.*

TAYLOR-STILES and Company
CUTTING MACHINES & KNIVES

204 Bridge Street Riegelsville, New Jersey


## SUPPLIERS News
WHAT THEY ARE DOING

**Sargent's Sons Corp.**, following the death of the firm's president, A. C. Sargent. F. Stanley Smith was made treasurer and general manager; and Raymond D. Tellier, assistant treasurer and clerk.

Jack Turer, previously with Virginia-Carolina Chemical Corp., has joined the research staff of **L. Sonneborn Sons, Inc.** He will concentrate on development work relating to the processing of synthetic fibers.

The Fiber Glass division of **Libbey-Owens-Ford Glass Co.** has appointed Arthur S. White field representative

Mr. White Mr. Graeflin

in the Kansas City area. Carl Graeflin, formerly with Hess-Goldsmith & Co., Inc., has been added to the sales force of this division.

John Crowther was recently named assistant sales manager of the **Stauffer Chemical Co.** He has been with the firm for seven years.

The management of Warwick Wax Co., Inc., a subsidiary of **Sun Chemical Corp.**, is being separated from the Warwick Chemical Co., a division of Sun. Maurycy Bloch is in charge of operations at the Wax company.

**Synthane Corp.** has moved its Boston sales office to 17 Taylor Building, 404 Main St., Wakefield, Mass., ten miles north of Boston. Added to the New York district sales office are Harry A. Weiss, who will service industrial accounts in Manhattan, and in Hudson, Bergen, and Passaic counties in New Jersey; and William J. Evert, whose territory is New York State, Long Island, and Brooklyn areas.

Jerome A. Olwell, formerly with United Merchants and Manufacturers, has joined **Texplant Corp.** and its affiliate, The Arlind Corp., as assistant to the president. G. Giraudi has been appointed to organize and manage the firm's engineering and production procedures division.

**Textile Machine Works** has announced plans for construction of an assembly plant in Almelo, Netherlands, to be known as Textile Machines Reading N. V. It will be used to supply full-fashioned knitting machines and parts for European countries, and will be managed by Warren Dresher, assistant purchasing agent.

Lester J. Hyland, with the firm for over 25 years, has been appointed sales manager of the industrial rubber division of **Thermoid Co.** Succeeding him as western division manager is Robert Gentles, previously district sales representative.

The new Philadelphia district manager for **Carbide and Carbon Chemicals Co.** is J. W. Ross. He succeeds R. M. Joslin, Jr., now midwestern division manager.

Clarence L. Rosenquist has been named assistant sales manager at **Union Special Machine Co.** Succeeding him as manager of the New York office is William G. Booth, previously manager of the Pacific Coast office. John R. Haderly has left the New York office to join the product application department in Chicago. Replacing him in Brooklyn is Joseph La Vecchia; Gerald Farula will handle the Long Island territory. Leonard Koehler is working out of Minneapolis as a representative.

**Whitney Chain Co.** has announced the appointment of Anthony J. Swisler as regional manager for the West Coast. George A. Banton is now district manager of the Southern California and Arizona territory.

W. A. Finn, formerly general European manager, has been named assistant general sales manager of **Worthington Corp.**

**Yale & Towne Manufacturing Co.** has established separate sales departments for its Worksaver and hand lift truck product lines. John I. Somers is sales manager for the Worksaver trucks, and T. F. Moriarty has been placed in charge of the hand lift trucks.

Century spindles, manufactured by the **Hartford Machine Screw Co.** and formerly sold by the H & B American Machine Co., are now being handled direct by the Hartford company.

CALCO dyelines

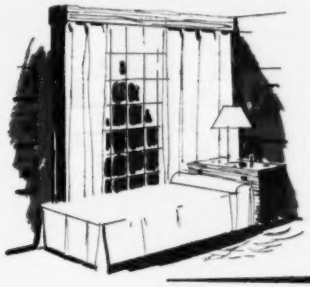
Advertisement No. 28 of a series

PREPARED BY AMERICAN Cyanamid COMPANY / CALCO CHEMICAL DIVISION
DYESTUFF DEPARTMENT, Bound Brook, New Jersey

Calco

# Here is the Fastest Vat Yellow of True Shade

Available in paste or powder form for your convenience, Calcosol* Fast Yellow Paste and Calcoloid* Fast Yellow Double Powder, excel all other bright vat yellows in fastness to light, chlorine, towel bleach and washing. This clear, bright true yellow will withstand prolonged light exposure even in pastel shades.



While they are suitable for most normal vat dye application procedures, best money value will be obtained with a minimum concentration of caustic soda and a maximum concentration of salt. Low liquor ratios also promote good color yield. These fast yellows level easily on both filament and spun viscose.

# A Versatile Direct Brown

Calcodur* Brown BRL Conc. is a versatile direct brown. Its rich full brown shade along with its adaptability to a variety of dyeing conditions and diversified fabrics make it very popular in all dye houses using direct dyes. Good fastness in the self shade or after resin treatment, excellent leveling properties on piece goods, or yarn in any form, high economy coupled with a high degree of fastness are some of the outstanding attributes of this dye.

Package dyeing, skein yarn, beams, stock, piece goods—cotton or viscose; acetate white fabrics; for upholstery, drapes, sport shirts, slacks, ladies wear, are some of the many uses for Calcodur Brown BRL Conc.

*Trade-mark

**Calcoloid Copper Brown Double Powder** and **Calcosol Copper Brown Paste** are adaptable to a variety of dyeing methods and a wide range of fabrics. They are ideal for providing improved fastness in rusts, tans, dusty roses and other shades requiring a fast, red-brown element.

| Stock, Package, and Beam Dyeing by Pigment or Reduced Methods for: | Piece Goods Dyeing On Jigs, Williams Units, Pad-Steam and Pad-Booster | | Other Methods |
|---|---|---|---|
| | Pigment Method | Reduced Method | Skein and Warp Dyeing for: |
| Bedspreads | Auto Seat Covers | Cotton Shirtings | Knitting Yarns |
| Chambrays | Bengalines | Drapery Fabrics | Labels |
| Drapery Fabrics | Corduroys | Dress Goods | Sportswear |
| Dress Goods | Cotton Shirtings | Sheetings | Cotton |
| Knitted Hosiery | Drapery Fabrics | Spun Rayon Shirtings | Viscose |
| Knitted Outerwear | Dress Goods | Upholstery Fabrics | |
| Toweling | Ducks | | |
| Tufting Yarns | Sheetings | | Screen Printing |
| Upholstery Fabrics | Slip Covers | | |
| Webbing Yarns | Spun Rayon Shirtings | | Draperies |
| | Twills | | Specialty Fabrics |
| | Uniform Dress Goods | | |

## An Essential Dye in Today's Market

Although not a new dye, Calcocid* Violet 4BXN has retained its popularity through years of use in textiles. Its very clear, bright violet shade makes it useful, along with other dyes, in producing brighter shades on wool. It can also be used as a toning color to brighten shades which are normally on the dull side.

Controlling shade changes in artificial light in shade matching is another important use, Calcocid Violet 4BXN being a good component to give a redder appearance under artificial light when this effect is desired.

Its fastness properties are not outstanding, but are good enough for the average application, and it works well with most of the other acid dyes which are dyed with acetic or formic acid.

This is an essential dye for producing the bright, clear shades required in today's market. It is manufactured from intermediates in which Calco has long been basic and which are carefully controlled to produce maximum brightness.

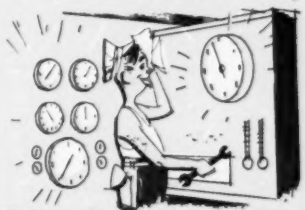
## For the Textile Bookshelf

Aniline Black (*Calco Tech. Bulletin No.* 821).

A timely review of the important methods for Aniline Blacks, which are enjoying increasing acceptance from cotton and rayon printers. The fastness properties, uses and application methods of the various Aniline Blacks are discussed and fully described.

Application of Dyes to New Synthetic Fibers (*Calco Technical Bulletin No.* 826).

A carefully compiled record of existing data on the new synthetic fibers. Dyeing methods for the coloring of the new synthetic fibers and fastness properties to look for are covered in this study.



*450,000 lbs. of high-pressure steam is generated every hour at Calco to furnish power and supply heat for the processing of dyes and intermediates.*

# *FOR SPEED PLUS PERFECTION*

## *in Center Front Seaming use the*

## "W&G" CENTER PLAIT and BUTTON STAY MACHINE!

It's not easy to get a smooth box plait on all classes of fabrics. But it's mighty important to the sales appeal of your shirts.

Now, with the improved "W&G" Style 992-26 for the Center Plait, and Style 992-23 for Button-Stay operation, you can be sure of laying a *perfectly smooth* center front on practically any fabric, at *extremely high speed.* This means more and better production—saves time in pressing, too.

The time-saving, cost-saving features shown here are just a few of the reasons why these "W&G" machines are setting the highest standards of both quantity and quality in modern shirt production.

*For Complete Information,* ask for your free copy of Bulletin No. 834.

**HIGH SPEED**—Tests prove that production speeds of approximately 4000 stitches per minute are entirely practical.

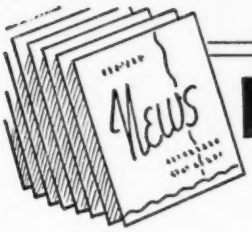
**FLOATING POWER**—Simple, cork-insert mounting absorbs vibration and contributes to smooth, quiet operation.

**IMPROVED LOOPER MECHANISM**—The looper drive mechanism operates without gears, by means of eccentrics and a well-balanced driving lever.

**SEMI-AUTOMATIC LUBRICATION**—Reservoir-type oiler assures ample lubrication of all important bearings.

**ROTARY DRIVE**—The powerful, simple, vibration-free rotary drive requires much less power for starting and stopping.

**LOW MAINTENANCE COSTS**—Carefully selected materials, precision workmanship, easy accessibility and replaceable main bearings mean less down time for maintenance.




# HELPFUL Booklets FREE

**Here is the "cream of the crop" of literature on textile subjects as prepared by TEXTILE INDUSTRIES' advertisers to aid in mill operation and management. These reference books and catalogs are free for the asking and there is no obligation involved. Read through the list carefully for booklet on the subject or new Equipment in which you are interested. Then fill in the numbers of those desired on the coupon on page 230 and mail it to TEXTILE INDUSTRIES. ("First Listings" shown below are not confined solely to TEXTILE INDUSTRIES' advertisers.)**

***This service is restricted to those engaged in operation and management of textile industries.***

**10-1. "Sentry-Lite"** bulletin illustrating and describing light unit that comes on automatically when power fails, illuminating 10,000 sq. ft. 9 hours or longer. Cleveland Electric Co., 557 Marietta St. N.W., Atlanta 3, Ga.

**10-2. Uxbridge Gentle-Air Slasher.** Bulletin on new Model B with specifications, performance, procedures, and operation. Bachmann Uxbridge Corp., Uxbridge, Mass.

**10-3. "Air Processing."** Set of three bulletins showing real meaning of the term, where it can be used, the requirements for a successful system, etc. J. O. Ross Engineering Corp., 444 Madison Ave., New York 22, N. Y.

**10-4. Printing, Finishing Dyeing Equip.** Illustrated 8-page folder on laboratory and production size equipment, with specifications and other data. L & W Machine Works, Rock Hill, S. C.

**10-5. UNIONMATEX** textile **machinery organization.** Bound book describes products and services offered by this voluntary organization of non-competing West German manufacturers furnishing anything from an individual piece of equipment to a fully completed and ready-to-run mill for any fabric. UNIONMATEX, Frankfort Am Main, Germany.

**10-6. Materials Handling Catalog.** 28-page catalog on enlarged line of power and gravity conveyors, hand trucks, and industrial casters, fully illustrated and with specifications. The Rapids-Standard Co., Inc., Dept. GC, Grand Rapids, Mich.

**10-7. Fans and Blowers.** Ask for the new catalog No. 400 covering fans and blowers for every requirement, with full specifications. Chelsea Fan & Blower Co., Inc., Plainfield, N. J.

**10-8. Modern Maintenance Needs.** New Puritan catalog presents problems of industrial housekeeping facing industry, and the solutions. Puritan Chemical Co., 916 Ashby St. N. W., Atlanta, Ga.

**10-9. Cationic resin bulletin.** Describes use in a new process for producing dimensional stability on 100% spun viscose and viscose rayon blend shirtint and dress fabric. Write for Aquex B.N.W.C., The Aquex Development & Sales Corp., Whippany, N. J.

**10-10. "Serves You Right"** is theme of succint review of fork-lift trucks, powered hand trucks and industrial towing tractors, with emphasis on proper planned materials handling systems, which can be obtained from Clark Equipment Co., Industrial Truck Div., Battle Creek, Mich.

**10-11. Caustic Soda booklet.** Deals with manufacture, its properties, methods of handling and storage, technical data, etc. Alkali Sales Dept., The Dow Chemical Co., Midland, Mich.

**10-12. "A Story of Tractor Tools and Their Use."** Comprehensive illustrated guide effectively present in cartoon-style the many principal uses for this type of Equipment. Hyster Co., 2903 N.E., Clackamas St., Portland 8, Ore.

**10-13. Steel Shop Equipment.** Write for profusely illustrated Hallowell folder describing line of shop desks, tool stands and carriers, cabinets, etc., adaptable to a wide range of uses. Standard Pressed Steel Co., Box 582, Jenkintown, Pa.

**10-14. Functional Glass Block data.** Folder shows in detail daylighting function of Light-directing and Light-diffusing Functional Glass Blocks. Pittsburgh Corning Corp., 307 4th Ave., Pittsburgh 22, Pa.

**10-15. Steam Generators.** Colorful booklet describes Erie City's VL factory assembled steam generating equipment for coal, gas or oil. Specifications for each type given. Erie City Iron Works, Erie, Pa.

**10-16. Motorized Chimney Draft.** New bulletin shows advantages of mechanical draft over natural draft in addition to eliminating costly stacks. Write for No. I-52. L. J. Wing Mfg. Co., Linden, N. J.

**10-17. Government Procurement Manual.** Designed to aid manufacturers in obtaining government business. 16-page booklet covers all aspects of the procurement picture. Trilane Publications, Inc., 1 Hudson St., New York 13, N. Y.

**10-18. New Soda Ash Bulletin.** 64-page edition contains both new material and revisions of previously used data covering the subject. Ask for Bulletin No. 5. Solvay Sales Division, 40 Rector St., New York 6, N. Y.

**10-19. Magnetic Protection Brochure.** Illustrated installations in the processing of cotton, waste, wool, and wool-rayon blends, with specifications for magnetic separators. Brochure B-563 available from Erie Mfg. Co., Erie, Pa.

**10-20. Platecoils in Heating and Cooling** processes illustrated and diversity of application described in 20-page brochure. Shows "how Platecoils have replaced pipe coils at a savings throughout industry." Platecoil Div., Kold-Hold Mfg. Co., Lansing, Mich.

**10-21. "Our Latchstring is Always Out."** Title of 36-page booklet of company history, its plants and products and giving little known facts about the company. Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

**10-22. "The Science of Economical Shelf Storage."** Booklet showing how engineered storage reduces materials handling costs. Full descriptions, well illustrated. The Frick-Gallagher Mfg. Co., Wellston, O.

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## CASTERS & WHEELS

*MAXIMUM FLOOR PROTECTION*

**If you want maximum floor protection, economy and efficiency Demand Darnell Dependability...Made to give an extra long life of satisfactory service . . . . .**

SAVE EQUIPMENT
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## CHEMICALS FOR TEXTILES

**VERSENE* (Regular)**
prevents lead sulfide stains on Viscose fiber; increases detergency of synthetic and "natural" soaps; prevents insoluble soap deposits; *completely* and *permanently* softens hardest water. Complexes almost all metallic ion contaminants.

**VERSENE-T***
complexes *iron* in *any* caustic solution. Prevents and removes iron stains. Produces *visibly* whiter cottons.

**VERSENE Fe-3 Specific***
This is the most powerful iron complexing agent known in normal pH range. For iron contamination problems only.

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Complexes iron and other metal ions such as calcium, copper, magnesium, cobalt, nickel, etc.

Use the Versenes whenever you have a problem in metallic ion contamination. As chemistry's most *precise* chemicals they give you *mathematical control over cations in solution.* For cleaner cloth, whiter whites and brighter colors; in scouring, bleaching, dyeing and general processing, the Versenes can help you economically and efficiently.

*T.M. Registered — Bersworth Chemical Co.

**LUBRITONE**

LUBRITONE is our latest outstanding development in the softening and finishing field.

1. **LUBRITONE has remarkable ability to soften fabrics and fibers.**
2. **LUBRITONE is non-yellowing and will not turn rancid on long storage.**
3. **LUBRITONE is completely dispersible in water, having wetting-back properties and is odorless.**
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5. **LUBRITONE sharply improves the abrasion resistance of resin finished fabrics.**
6. **LUBRITONE affects neither the shade nor the light fastness of dyed goods.**
7. **LUBRITONE is very economical and easy to use.**

*We highly recommend its use in the last rinse to lubricate package or skein dyed yarns.*

*Because of its lubricating action LUBRITONE greatly reduces needle cutting on resin finished goods when applied in the final rinse after curing.*

*Write or call us today for further information.*

CHAS. S. TANNER CO. *manufacturing chemists*
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**4** **HOW FACTORING CAN INCREASE PROFITS**—Describes how factoring works out in keeping clients' capital liquid and attitude of factor toward checking credits, including typical balance sheet.—COMMERCIAL FACTORS CORP., 2 Park Ave., New York City.

**7** **RAYON TELLS ITS STORY TO THE PUBLIC** — Folder containing reprints of advertisements explaining some of the many roles in which rayon is serving the American public.—AMERICAN VISCOSE CORPORATION, 350 5th Ave., New York 1, N. Y.

**12** **CONDENSED LISTINGS**—8 page pocket sized booklet listing by plan flow the machinery and mill supplies available. Designed to help purchaser in grouping his orders to greatest advantage.—ATKINSON, HASERICK & CO., Boston, Mass.

**20** **VISION TESTING EQUIPMENT** — Pamphlet entitled "What you can expect from a good vision program" written by a prominent personnel director, also circular describing the Keystone Occupational Visual Service. KEYSTONE VIEW COMPANY, Meadville, Pa.

**21** **CHROMIUM PLATING.** New booklet tells how Walhard engineered hard chromium plating service works for industry. Walhard's capacity to produce, controlled quality, and economical operation are discussed along with pictures of the operations. WALTON AND LONSBURY, Attleboro, Mass.

**22** **THE WONALANCET WAY**—Is the title of an editorial booklet published five times a year which deals with current problems appearing worthwhile at the time they are written. WONALANCET COMPANY, 128 Burke St., Nashua, N. H.

## PLANT AND PLANT MAINTENANCE

**102** **"TANK TALK"**—Sixteen page booklet of illustrations showing various types of elevated steel tanks constructed and erected by manufacturers as well as stand pipes, reservoirs, storage and high pressure vessels, cylinders, along with helpful technical data. Also a list of what a few of the cotton mills, etc., said.—R. D. COLE MANUFACTURING COMPANY, Newnan, Ga.

**103** **HUMIDIFICATION, EVAPORATIVE COOLING** —Bulletins available displaying AMCO automatic self-cleaning atomizers, controls, and evaporative cooling equipment.—AMERICAN MOISTENING CO., 260 W. Exchange St., Providence, R. I.

**118** **"PARKS PARABLES"** — Recent issue on Parks Turbo Traveling Cleaners for spinning, twisting, winding, and warping. Also "Up Draft" cleaners to keep overhead and ceilings free from fly and lint.—PARKS-CRAMER CO., Fitchburg, Mass.

**119** **MOPPING EQUIPMENT**—Complete catalog and circulars containing information on the many sizes and styles that can be had.—S. C. LAWLOR CO., 121 N Aberdeen St., Chicago, Ill.

**133** **PAINTING SPECIFICATIONS AND COLOR CHIPS**—Industrial Paint and Color Guide, CC446, gives full painting specifications for exterior and interior of industrial plants with complete color samples.—THE SHERWIN-WILLIAMS CO., Painter Maintenance Div., Cleveland, Ohio.

**137** **PUMPS AND COMPRESSORS** — Bulletin QP-11 presents the standard types of Gardner-Denver air compressors, centrifugal pumps, steam and power reciprocating pumps in a brief and comprehensive manner to enable the prospective user to select the size and type for specific needs. — GARDNER-DENVER Co., Quincy, Ill.

**150** **RIHCO HUMIDIFIERS AND COOLING SYSTEMS**—Bulletin describes new atomizers with construction lessening air consumption in humidifier systems, evaporative cooling systems.—ALDRICH MACHINE WORKS, Greenwood, S. C.

**151** **INDUSTRIAL BRUSHES**—Illustrated Booklet of industrial brushes featuring textile usage on shears, printing machines—also flock, raising and cylinder brushes.—M. W. JENKINS SONS, INC., 444 Pompton Ave. Cedar Grove N. J.

**157** **MAINTENANCE**—Silicone water-repellent for masonry described in data sheet XR-129G-1. Properties and application of an invisible, durable, non-

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PRECISION makes more textile gears because PRECISION Gears have longer Accuracy. Simple, isn't it—yet, not easy! But, PRECISION gets a head start through superlative gear designing. Then, precision gear cutters (they're up-to-25 year men) and the finest machines take over. They cut "little giants" or electronic gears with proportionate skill. The "South's Largest Makers" means the South's most dependable gears. That's what PRECISION can give you for your next gear needs.
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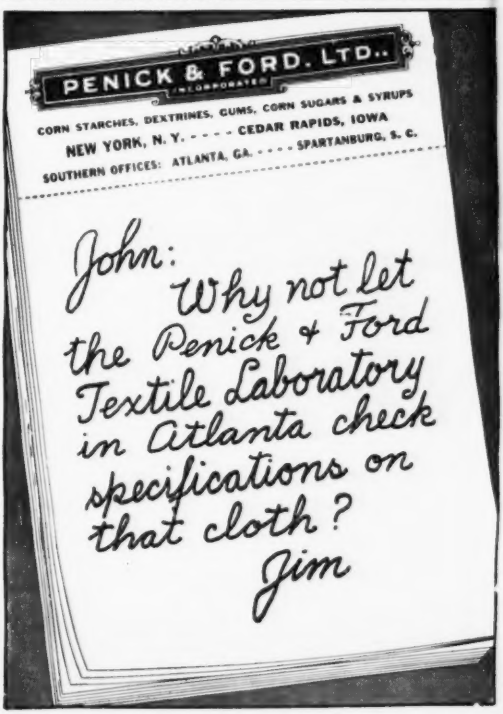
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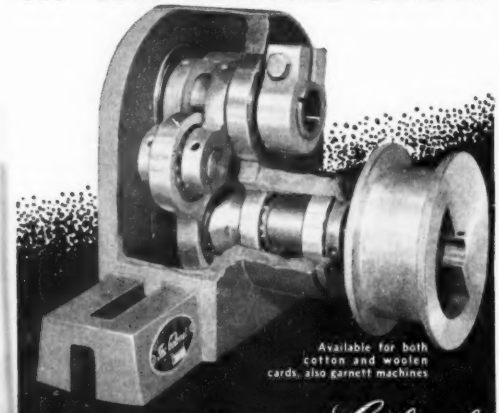
SOUTHERN OFFICES: ATLANTA, GA. - - - - SPARTANBURG, S. C.
John:
Why not let the Penick & Ford Textile Laboratory in Atlanta check specifications on that cloth?
Jim

# DON'T MISS

*The Colonel*

## AT THE TEXTILE SHOW



Available for both cotton and woolen cards, also garnett machines

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*Again the Colonel sets the pace . . . no more delays and costly down-time for users of the Colonel* Ball Bearing Comb Box. Like the self-aligning tail stand that only a few months ago revolutionized the manufacture of Comb Boxes . . . the new, completely re-designed *Colonel* is so simple, so easy to adjust that you can now make repairs and adjustments in your own shops . . . now, there is no need for expensive factory returns. Be sure to see the new *Colonel*.

**Booth 115**

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✓ *The Simplest!* ✓ *The Most Economical!* ✓ *The Best!*

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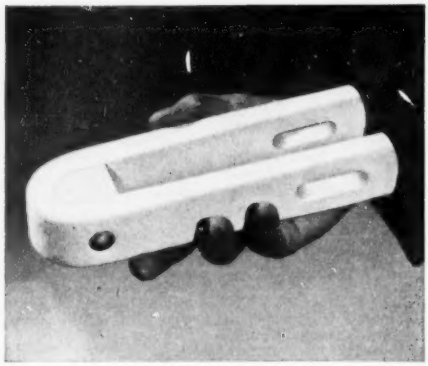
## The HARRIS "Heavy Duty" Lug Strap—

*"Tests have proven very satisfactory"*



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ELEVATED TANKS • VESSELS • CYLINDERS
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plugging, silicone masonry water repellent that is inexpensive and easy to apply fully discussed.—DOW-CORNING CORP., Midland, Mich.

**167** **COLOR CONDITIONING FOR INDUSTRY** — Booklet describing how color is used to reduce maintenance costs, increase production, curtail fatigue, improve employee morale.—E. I. DU PONT DE NEMOURS & CO., INC., FINISHES DIV., Wilmington, Delaware.

**179** **BETTER WAYS**—Form 2020, condenser catalog of standard and special model Toledo Industrial Scales that are being used in receiving, shipping, and production operations by all industries including the textile field.—TOLEDO SCALE CO., Box 97, Toledo, Ohio.

**187** **SILICONE INSULATION**—Data Sheets 14C describing silicone electrical insulating varnishes used in class H equipment. Protection and longer life with Silicone insulation described. — DOW CORNING CORP., Midland, Mich.

**188** **PROGRESSING-CAVITY PUMPS**—A new principle in pumps. Self-priming, positive displacement, uniform flow features discussed. — ROBBINS & MYERS, INC., Pump Div., Springfield, Ohio.

**190** **HOW TO SWEEP WITH A COTTON MOP**—Four-page folder showing correct technique for sweeping floors in various mill departments, including care of mops, short cuts, etc.—G. H. TENNANT CO., 2530 N. Second St., Minneapolis 11, Minn.

## POWER TRANSMISSION, MOTORS, BELTING, LUBRICATION

**206** **LOOM MOTOR BULLETIN**—The new design of this ball bearing motor is claimed to represent an advance in the design of loom motors fully discussed.—THE LOUIS ALLIS CO., 427 E. Stewart St., Milwaukee, Wisconsin.

**207** **TRICO OILER INSTALLATION**—Twelve interesting pages of actual "on the job" photos of Trico oiler applications on nationally recognized machinery and equipment.—TRICO FUSE MFG. CO., 2948 N. 5th St., Milwaukee 12, Wisc.

**218** **BALL BEARINGS FOR TEXTILE MACHINERY** —A 40-page catalog illustrating Fafnir Ball Bearing units for replacement or new applications in all phases of textile processing.—THE FAFNIR BEARING CO., New Britain, Conn.

**226** **COTTON CARD DRIVES**—Booklet B-4596 which describes Westinghouse individual cotton card drives. Through the proper design of card motors by Westinghouse, individual drive is now practical and the booklet gives full information. — WESTINGHOUSE ELECTRIC CORPORATION, P. O. Box 868, Pittsburgh 30, Pa.

**254** **LOOM RECONDITIONING PROGRAM AT TALLASSEE MILLS**—Reprint of exclusive story on the loom reconditioning program at one of the biggest southern mills. This article shows how central lubricating system was built into each rebuilt loom as part of the improvement program. — BIJUR LUBRICATING CORPORATION, Rochelle Park, N. J.

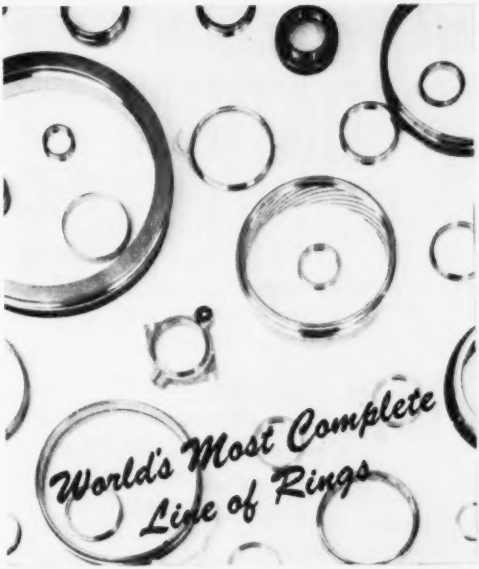
**259** **SUNOTEX MACHINE OIL**—Booklet describing this machine oil as being "custom-made" for the textile industry. Advantages discussed and pictures of uses which include knitting machinery, SUN OIL COMPANY, Philadelphia 3, Pa.

**266** **LUBRICATION** — Bulletin BG2-DC, describes properties of Silicone greases used in motors at high speeds and temperatures, on oven conveyors, tenter frames, can dryers, etc. Decrease by 10 to 1 in re-lubrication requirements described.—DOW-CORNING CORP., Midland, Mich.

## INSTRUMENTS, STEAM SPECIALTIES

**300** **TEXTILE DIGEST** — 18-page manual reviewing performance-proved procedures for improved handling of more than 60 essential cleaning and related operations in textile mills.—OAKITE PRODUCTS, INC. 22, Thames St., New York, N. Y.

**301** **JOHNSON ROTARY PRESSURE JOINTS**—Bulletin describing the rotary pressure joints which requires no packing, no lubrication and no adjustment, giv-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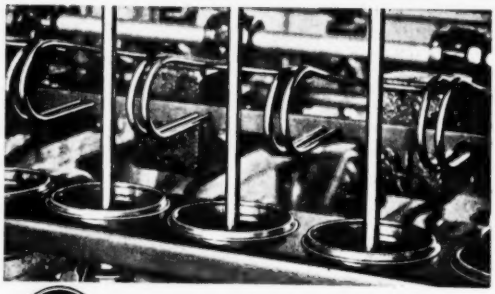

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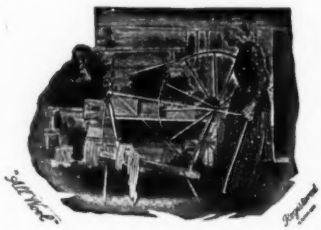

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ing installation and maintenance instruction, types, sizes, dimensions and prices.—THE JOHNSON CORP., Three Rivers, Mich.

**303** **PROCESS CONTROL EQUIPMENT**—Catalog containing brief description of standard and special process control equipment engineered for textile industry. Includes schematic diagrams. — MASON-NEILAN REGULATOR CO., 1190 Adams St., Boston, Mass.

**316** **HYDRAULIC POWER UNITS** — Literature describing hydraulic unit, motor, pump, reservoir, valving a small compact unit for operating of hydraulic calenders, presses, hydraulic controls, etc.—B. F. PERKINS & SON, INC., Holyoke, Mass.

**321** **RED-RAY BURNERS**—Bulletin describing use of Red-Ray Burners in preheating and partial drying to increase capacity of frame.—RED-RAY MFG. CO., 445 W 45th St., New York, N. Y.

**334** **TEXTILE MILL INSTRUMENTS** — Eight-page bulletin 98180 describes the use of automatic control instruments used on such processes as size cooking, storage kettles, size boxes, slashers, dye vats and driers. —TAYLOR INSTRUMENT COS., Rochester, N. Y.

## CARDING, SPINNING, WINDING

**402** **AUTOMATIC CLEANING AND OVERHEAD HANDLING FOR TEXTILE MILLS**—24-page bulletin describing the American Monorail Automatic Cleaner for preventing accumulation of lint on spinning, twisting, winding and warping machines. Also for cleaning monitors and card room ceilings.—THE AMERICAN MONORAIL CO., Cleveland, Ohio.

**408** **CARD GRINDING INFORMATION** — Outlines care of grinders, instructions on speed to run grinders, amount of oil to add to machine and other pertinent information.—B. S. ROY & SON CO., Worcester, Mass., and Charlotte, N. C.

**416** **THE BRIEF SAGA OF THE RING TRAVELER** —An interesting history relative to the ring traveler, which is in reality the basis of the spinning frame. John Thorpe's invention of ring traveler, the development of the spindle, and the invention of Rabeth's Bolster type spindle are covered. — NATIONAL RING TRAVELER CO., Pawtucket, R. I.

**419** **TEXTILE APRONS**—Illustrated folder showing the steps in manufacture of genuine leather aprons for all types of long draft spinning and card room machinery.—TEXTILE APRON COMPANY, East Point, Ga.

**427** **WINDING AND CREELING WARP YARNS**—Universal's Bulletin No. 442 contains an interesting treatment of this subject.—UNIVERSAL WINDING COMPANY, Providence, R. I.

**430** **DIXON DATA** — Dixon house organ entitled "Dixon Data," which is available in a new form every other month. These house organs contain information on spinning problems as they relate to saddles and component parts. — DIXON LUBRICATING SADDLE CO., Bristol, R. I.

**432** **PRECISION TEXTILE WINDING**—Bulletin on Kidde Tensions and Density Control for winding rubber cones.—WALTER KIDDE & CO., INC., Belleville, N. J.

**436** **MAINTENANCE INFORMATION FOR YOUR SCOTT TESTER**—Booklet containing maintenance data for calibration of Scott Testers, clamps for testers, gear-box lubrication, and recording.—SCOTT TESTERS, INC., Providence, R. I.

**437** **SPINDLE TAPE LACING EQUIPMENT**—Circular No. 54 illustrating and describing the Clipper method of joining spindle tapes.—CLIPPER BELT LACER CO., Grand Rapids 2, Mich.

**438** **HEADLESS PACKAGE TWISTER ELIMINATES REDRAWING**—Literature shows high-speed Face Drive Twister for accurately building tapered or straight-end headless packages which go direct to quilling or warping without redrawing.—U. S. TEXTILE MACHINE CO., Scranton 8, Pa.

**443** **COMPARATIVE YARN TABLE**—Chart giving woolen number (cut and run system), also cotton worsted and metric system; also, Comparative Rayon Denier Yarn Table.—VICTOR RING TRAVELER CO., Providence, R. I., and Gastonia, N. C.

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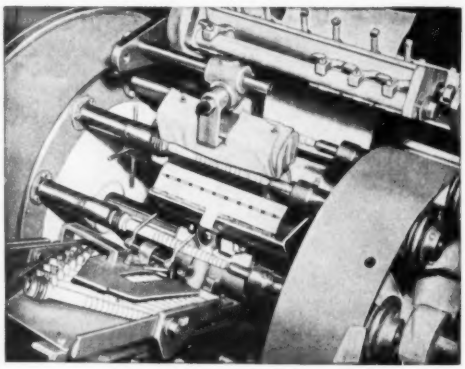

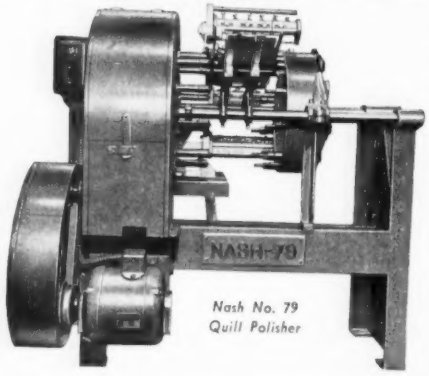


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**445** **ROLLER BEARING SPINDLES**—Illustrated booklet showing various types of Marquette Roller Bearing Spindles. The unique full-floating footstep bearing is pictured in cut-away views, and its advantages are described. — THE MARQUETTE METAL PRODUCTS CO., 1145 Galewood Ave., Cleveland, Ohio.

**446** **WINDING MACHINES**—Principles and Practices is the title of Bulletin No. 339. Part 2 on the No. 44 Roto-Coner is profusely illustrated with exploded view drawings with charts and tables relative to drum winders.—UNIVERSAL WINDING CO., Providence, R. I.

### WEAVING, SLASHING

**509** **MULI-MOTOR SLASHER DRIVES** — Booklet designed to bring the descriptive information on multi-motor slasher drives up to date, and emphasize the improvement in the drive through the use of Rototrol for the control of winding tension.—WESTINGHOUSE ELECTRIC CORP, 511 Wood St., Pittsburgh 30, Pa.

**512** **LOOM PRODUCTION CALCULATOR** — Handy pocket slide rule available for computing per cent efficiency of a loom. Simply set operative hours and loom speed and the per cent efficiency can be read on the side opposite the pick counter reading.—VEEDER-ROOT, INC., Textile Counters Div., Hartford 1, Conn.

**518** **NIAGARA TWIST-SETTER**—Folder describing the revolutionary Niagara Twist-Setter which has no moving parts. This yarn is sprayed from all sides to afford maximum economy.—SEYDEL-WOOLLEY & CO., 748 Rice St., Atlanta, Ga.

**521** **STEEL WARP BEAMS**—20 page Catalog No. 45 illustrating Standard and Special Purpose Warp Beams for the weaving industry, both broadloom and narrow fabrics. Also Textile Machinery Specialties.—MILTON MACHINE WORKS, INC., Milton, Pa.

**524** **JOHNSON WARP SIZES**—12 page fully illustrated booklet, describing the 7 cylinder sizer with stretch indicator and finger-tip control of stretch. A point-by-point analysis.—CHARLES B. JOHNSON MACHINE WORKS, Piercy and Holsman Sts., Paterson, N. J.

**529** **STRAPPING**—Looms and harness strapping, complete line. Full information supplied on request. —TON TEX CORPORATION, 16 West 61st St., New York 23, N. Y.

**530** **ROTARY UNIONS**—New catalog shows how to cut costs, get better sealing, on can dryers, slashers, calenders, etc. Catalog No. 500 entitled "Where Good Connections Count." — PERFECTING SERVICE COMPANY, Atando Ave., Charlotte, N. C.

**531** **EVENNESS TESTER**—Folder explaining how this Tester takes the guess out of quality control and each processing step from carding through spinning.—USTER CORPORATION, Charlotte, N. C.

### DYEING, FINISHING, CLOTH ROOM

**604** **STABILON**—For Napthol Dyeing and Printing—reduces cracking and brightens Napthol shades by stabilizing fast color salts and bases. Presents premature decomposition of stock feeder solutions and print pastes—fully discussed in booklet available.—AMERICAN ANILINE PRODUCTS, INC., 50 Union Square., New York, N. Y.

**615** **HIGH PRODUCTION EXTRACTORS FOR RAW STOCK—YARN—HOSIERY**—Descriptive bulletin and full information on automatic Twintainer Extractor with bottom-unloading removable baskets. Machine replaces three conventional extractors, lowers labor costs. —FLETCHER WORKS, INC., Philadelphia, Pa.

**616** **FINISHING DRIVES**—32-page booklet covers complete drives Westinghouse has engineered for the textile finishing industry. Describes all types of finishing ranges and discusses advantages of Westinghouse drives for these installations. "Packaged" drives for batch processes covered. — WESTINGHOUSE ELECTRIC CORP., 511 Wood St., Pittburgh 30, Pa.

**617** **AUTOMATIC CONTROL SYSTEM FOR CONTINUOUS BLEACHING**—Illustrated folder describes the new method of controlling the temperature, pressure, and liquid level in the continuous bleach operation. — TAYLOR INSTRUMENT COMPANIES., Rochester 1, N. Y.

**624** **STRAIGHTENING THE WEFT IN CLOTH**—Article describing the progress made in this field, and latest machinery available for both skewed and bowed weft straightening.—MOUNT HOPE MACHINERY CO., Taunton, Mass.

**629** **SEVEN TANK BALL BEARING CRABBING MACHINE**—Circular 1073 describes this 7 tank stainless steel roller bearing open width machine for scouring, open soaping, crabbing, dyeing, etc. Each pair of squeeze rolls is operated by separate D. C. motors controlled by a built-in dancer or compensating roll. Pressure supplied by air cylinder or air motors and the final nip is of 15 ton capacity for extracting, according to the circulars.—BIRCH BROTHERS, INC., Somerville 43, Mass.

**641** **PACKAGE DYEING**—Machines for dyeing extracting, and dyeing yarn in package and on beams described in illustrated booklet on the theory of package dyeing and equipment for this process.—SMITH, DRUM & CO., Philadelphia 33, Pa.

### DYESTUFFS, CHEMICALS, SOAPS

**703** **WATER REPELLENTS**—Data sheet 1043 describes application of De Cetex 104, which is described as a durable, water repellent finish that is easily applied on conventional finishing equipment and its resistance to spotting; laundry or dry cleaning durability is good. DOW-CORNING CORP., Midland, Mich.

**704** **INTERPRETATION OF ANALYSIS**—The booklet "Interpretation of Analysis for the Layman" describes many of the common analytical tests made on surface-active materials, and illustrates how the analytical figures are used to deduce the composition of several materials. The booklet also contains a glossary of many

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terms useful to those who work with industrial chemicals, and a brief discussion of the role Nopco processing chemicals are playing in industry today. — NOPCO CHEMICAL COMPANY, Harrison, N. J.

**713** **LIOVATINE ED**—Vat dyeing assistant increasing penetration and level dyeings with maximum yield of color.—SANDOZ CHEMICAL WORKS, 61 Van Dam St., New York City.

**717** **CERFAK 453**—Descriptive 4-page folder includes wetting speeds and rewetting data as well as detergency data of this fast, economical and versatile surface action agent useful in all wetting operations.—E. F. HOUGHTON & CO., 303 W. Lehigh Ave., Philadelphia, Pa.

**718** **FLAKED CERFAK**—Anionic detergent with fast wetting ability, excellent for all scouring or wetting operations, according to this four-page folder which includes charts on concentrations to be used.—E. F. HOUGHTON & CO., 303 W. Lehigh Ave., Philadelphia, Pa.

**745** **RAPIDASE FOR DESIZING**—Bulletin explaining in detail the properties and characteristics of Rapidase.—WALLERSTEIN CO., INC., 180 Madison Avenue, New York 16, N. Y.

**751** **LOMAR PW**—Bulletin No. 21 describes the actions and uses of this dispersing agent. Two general functions described as prevention of rapid sedimentation and decrease in viscosity—fully discussed.—JACQUES WOLF & CO., Passaic, N. J.

## KNITTING

**801** **THE WILDMAN SINGLEHEAD FULL-FASHIONED HOSIERY MACHINE**—Literature on request from the WILDMAN MFG. CO., Full-Fashioned Division, Norristown, Pa.

**810** **ALUMINUM BEAMS**—Catalog No. 1-21 describes Hayes magnesium and aluminum specialties for the textile industry. Illustrates this company's beams that are one-third the weight of conventional types.—HAYES INDUSTRIES, INC., Jackson, Mich.

**812** **CIRCULAR KNITTING MACHINES**—Interesting, informative and well illustrated is this six-page folder, just released, which describes this company's small diameter circular knitting machine.—H. BRINTON COMPANY, Kensington Ave., and M. St., Philadelphia 34, Pa.

## SEWING MACHINES

**904** **CONDENSED CATALOGUE**—A 40-page pocket-sized booklet illustrating and describing sewing machines adaptable for practically all phases of the needle trade.—WILLCOX & GIBBS SEWING MACHINE CO., New York, N. Y.

**912** **ELASTIC HEMMING AND INSERTING MACHINES**—Bulletin No. 833, illustrating and describing the improved high speed machine Style 992-5, for work on undergarments, dresses, pajamas, etc.—WILLCOX & GIBBS SEWING MACHINE CO., New York, N. Y.

## MATERIALS HANDLING

**1003** **CASTERS AND WHEELS**—192 pages, describing casters and wheels suitable for all types of industrial applications. Every mechanical engineer and purchasing agent should have this.—DARNELL CORP., LTD., Long Beach 4, Calif.

**1006** **LANE CANVAS BASKETS**—16 page illustrated booklet describing the Lane line of canvas baskets for textile use.—W. T. LANE & BROTHERS, Poughkeepsie, N. Y.

**1011** **TEXTILE TRUCKS** — Booklet describing doff boxes, frames and trucks, yarn, waste, platforms, conditioning, steep lap, fiber, utility trucks, etc. Uses and description.—EXCEL TEXTILE SUPPLY CO., Lincolnton, N. C.

**1031** **MOTOR-DRIVEN TROLLEY HOISTS**—12 page illustrated booklet describing Robbins & Myers motor-driven trolley hoists. Capacities from 1000 to 20,000 pounds. Bulletin 805-A. — ROBBINS & MYERS INC., Hoist & Chain Div., Springfield, Ohio.

## MISCELLANEOUS

**1101** **AUTOMATIC BOBBIN REFINISHER** — A descriptive bulletin illustrating and describing method of refinishing throwing bobbins on a production schedule.—J. M. NASH COMPANY, 2300 N. 39th St., Milwaukee, Wis.

**1102** **BALING PRESSES**—An illustrated folder describing this manufacturer's complete line of balers for all materials. Both Downstroke and Upstroke models.—ECONOMY BALER CO., Ann Arbor, Mich.

**1103** **UNBRAKO SCREWS**—Illustrated 16-page booklet No. 570 gives data on Unbrako hollow set screws, with knurled point, self-locking features. Includes miscellaneous screw and locking nut data.—STANDARD PRESSED STEEL CO., Jenkintown, Pa.

**1121** **FOOT PROTECTION**—Booklets and literature available on the Stahmer wooden sole shoe which is especially designed for wet-process work, since it reduces slipping. Cost is low and many styles and types are available, and all have quality sanded heavy maple wood soles.—F. J. STAHMER SHOE COMPANY, 2349 Boies Ave., Davenport, Iowa.

OCTOBER, 1952

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## News in Brief

(Continued from page 91)

sists of a built-in mirror which extends across the back of a loom and behind the harness so that it is possible for the weaver constantly to watch the warp sheet before it enters the harness. It is said that warp thread breakages can be reduced.

**"Communism in Unions."** No. 2 in a series of booklets on "What to do About Communism in Unions" has been issued by the Employee and Plant Community Relations, General Electric Co., Schenectady 5, N. Y. Reprints are available upon request.

**Show Planned for Yarns, Fabrics, and Finishes.** An international exposition of fabrics, fibers, finishes, and yarns is being scheduled for July 26-31, 1953 at the Waldorf-Astoria in New York City. The show is under the guidance of Expositions Inc., according to Arthus Tarshis of that company.

**Birthday Party for Safety.** The 40th annual National Safety Con-

## Pressure Type Fabric Dyeing Machine Being Developed

A pressure fabric dyeing machine is being developed by the Textile Research Division at the Newport Textile Laboratory of the Du Pont Company as part of the long-range research program to facilitate and perfect the dyeing of new synthetic-fiber fabrics, particularly those of "Orlon" acrylic fiber and "Dacron" polyester fiber.

Paul M. Cole, senior research engineer of the Engineering Department's Machine Development Section, who designed the machine, pointed out that the development is not near completion but he said it potentially meets every one of the 14 characteristics of an "ideal dyeing machine."

"It needs the refinements of the textile machinery manufacturer and the experienced touch of the practical dyer," he said. He disclosed that the development is named "Barotor," (pronounced "bar rotor") because its principal mechanical parts consist of a rotor and uniquely operating bars within a steel cylinder. The machine is normally operated at 250 F, corresponding to a pressure of 15 pounds per square inch.

Du Pont developed the "Barotor" largely as a service to customers, Mr. Cole said, and licensing arrangements under pending patents are being made with several textile machinery firms. The dyers will be free to use the "Barotor" without royalty.

The 14 points of the ideal dyeing machine which the "Barotor" potentially meets, Mr. Cole said, are:

1. Fabric is open width at all times
2. Tensionless and wrinkle free
3. All points in uniform and frequent bath contact
4. Operability with all fabric constructions, both filament and spun
5. Handling of batches as small as 100 yards and batches in excess of 1000 yards
6. Rapid bath agitation or circulation
7. Wide range of bath ratios permissable
8. Exact duplication of conditions between laboratory and production scale
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*Just a pinch* of Antifoam A kills foam in textile sizes without hampering the wetting action of the size itself. It's effective in gelatin, starch or casein, in concentrations as low as 0.002 ppm.

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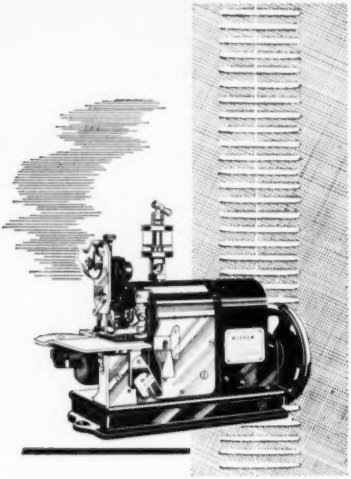

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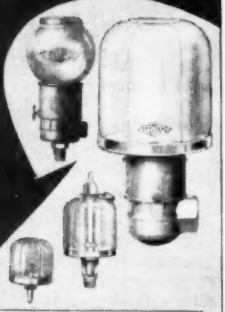

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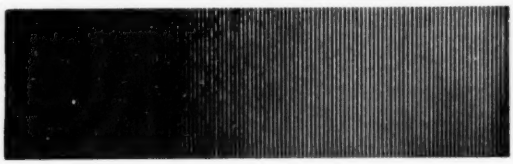

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gress will be held in Chicago October 20-24. The Congress is the annual convention of members of the National Safety Council, and this year the Council plans to celebrate 40 years of development in accident prevention. Details are available from National Safety Council, 425 North Michigan Avenue, Chicago 11, Ill.

**President Rejects Finding.** The President's recent rejection of the U. S. Tariff Commission's recommendation for remedial action on the escape clause application of U. S. domestic producers of garlic marks the first such instance wherein a majority finding of injury by the Commission has been turned down by the Chief Executive acting under his discretionary powers provided in the Trade Agreements Extension Act of 1951 (Pub. Law 50). In the law the President was given discretion to carry out, modify or reject Commission recommendations. It was expected that he would fail to follow a Commission recommendation only when external considerations, such as international commitments or possible repercussions abroad, made it advisable. By taking issue with the Commission's domestic determination of injury to American garlic producers, the President, according to the American Tariff League secretary, "has gone out of his way to impugn the integrity of the U. S. Tariff Commission."

**On What You're Wearing.** "Do You Know What You're Wearing?" is the title of a 24-page booklet recently issued by Stevens Publications, 139 East 52nd Street, New York City. Written by George E. Linton, the digest includes the story of fibers both natural and man-made, blends, weaves, finishes, and fashion influences.

**Report on Rio Grande Cotton.** Early cotton harvested in the Lower Rio Grande Valley of Texas from the crop of 1952 was slightly weaker and a little finer than cotton harvested during the same period out of the crop of 1951, according to tests made on representative samples collected and tested by Cotton Merchandising Research of the University of Texas. It is estimated from the relationship found between fiber properties and the strength of 22s yarn that cotton from this year's crop will make yarn with a strength of 100 pounds compared to 102 pounds for yarn out of the crop of 1951. The nep count to be had for cotton from the crop of 1952 should not differ materially from that of the 1951 crop which was 21 per 100 square inches of card web of 40-grain sliver.

**Summary on Wool.** Total production in the United States of woven fabrics containing 50 per cent or more by weight of wool, reprocessed wool, or reused wool amounted to 375 million yards in 1951. This was 12 per cent below 1950 production of these fabrics. Consumption of raw wool on the woolen and worsted systems amounted to 484 million pounds in 1951, 24 per cent under 1950. Production of yarns other than carpet was only 5 per cent under 1950, but carpet yarn production was down 34 per cent.

**Mills Deplore 1953 Cotton Standards.** The cotton textile industry has assailed Secretary of Agriculture Brannan's decision to revise government cotton standards downward without first gaining approval of United States manufacturers, who use two-thirds of all cotton produced in the country each year. The American Cotton Manufacturers Institute made public a joint request by eight textile associations that Secretary Brannan delay promulgation of revised standards pending a conference at which representatives of all domestic and foreign groups who buy, sell, or ship cotton could seek mutual approval. He denied the request, and the new standards were issued August 12 and are scheduled to become effective with the start of the 1953 crop year.

**Saran in Germany.** Known in the United States as Saran, vinylidene chloride is being produced in Western Germany under the trade name Harlon. Uses of this fiber

Smoother processing for your synthetics and blends with
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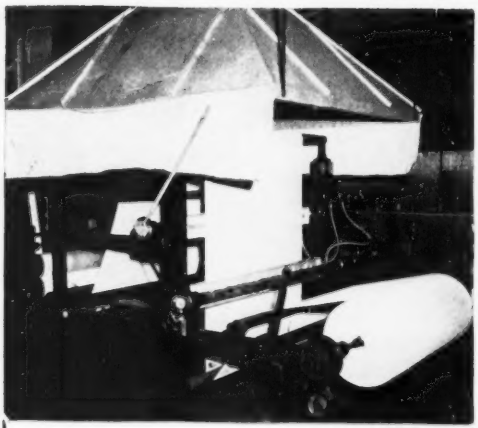

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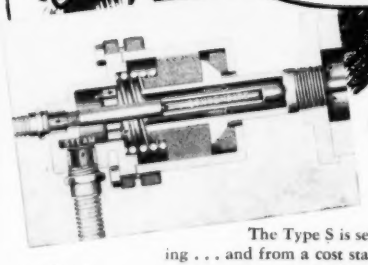
**JOHNSON**
*Rotary Pressure*
**JOINTS**



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The Type S is self-supporting . . . and from a cost standpoint it carries its own weight too. It stops misalignment cold because it shifts with the roll — slashes maintenance because it's completely packless and self-lubricating. It's the perfect answer for many jobs.

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## Educational Device for Textile Consumers

Home economics teachers and sales training directors will soon find their jobs made easier, where textiles are concerned, by a new educational device called "The Textile Visual Educator."

Designed as a practical visual aid to teachers, the Educator was developed by Louis L. Louft, independent motion picture producer, who has made a specialty of producing textile films.

It consists of yard-long samples of some fifty different textiles—everything from cottons to blended fabrics—mounted on a sturdy wooden easel.

Each sample, quickly and easily detachable by a flick of the thumb, carries its own descriptive label with authentic data written by Dr. Simon Williams, textile educator and consultant.

Digesting important information which formerly could be obtained only by time-consuming correspondence with individual manufacturers, the essence of the textile story is placed at the teacher's fingertips.

The most attractive feature, in the opinion of the teachers, is the generous size of the samples themselves.

are much the same as those of Saran in the U. S.

**Employment in Hosiery Manufacturing.** Employment in the hosiery manufacturing industry has increased 12 per cent in the last five years, according to the National Association of Hosiery Manufacturers. Although the industry is fully equipped with the best and most modern machinery, the very high standards in style and fit demanded by the American public makes necessary a tremendous amount of hand detail work which machinery cannot displace.

**Cotton Bag Promotion.** The Cotton Bag Market Committee has issued a pamphlet titled "A Special Message to Cotton Mills," in which the virtues of the cotton bag are extolled. Mills are asked to specify cotton bags for shipping starch to: reduce mill costs because of their high resale value; reduce mill costs because of less bag breakage; make handling easier; make starch mean more sales for the mill.

**Brochure on Wool Shrinkage.** A brochure on the cause and treatment of the various types of shrinkage in wool textiles has been issued by The Wool Bureau, Inc. According to the Bureau, when the product is to be shrink-resistant wool fabric, two factors guide the manufacturers' plans: (1) the relative interest in a luxurious, soft hand as compared with ease and frequency of laundering, and (2) the proper chemical treatment. When purchasing a garment labeled "shrink-proof," "shrink-resistant," or "washable," the consumer must bear three things in mind, the Bureau asserts. These are (1) the maximum percentage

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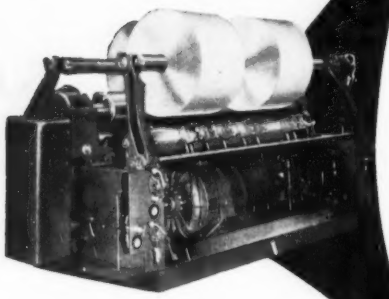
# duplex REWINDER



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- Simplicity of design
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- Ease of operation and maintenance
- Efficient and economical

The new B & S #15 Duplex Rewinder is powered by a Louis Allis Eddy Current Type Variable-speed Drive. A variable volume pump driven by an A. C. motor supplies power to the rewind shafts, and the winder is powered by the Eddy Clutch. By placing the entire drive beneath the machine, B & S designers have saved valuable floor space.

Accurate pressure control and precision winding are achieved by pneumatic cylinders for raising and lowering the rewind arms. For full center winding rewind shafts can be locked in "out" position.

To eliminate all possible vibration, the B & S Duplex Rewinder is mounted on heavy cast-iron bedplate. Fully enclosed piping and easily accessible controls assure smoothness and efficiency in operation, as well as ease and economy in upkeep.

For further details write to The Bagley & Sewall Company, Watertown, New York.

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To keep belts in service longer, use only GENUINE Clipper Belt Hooks applied with Clipper Belt Lacers.

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Clipper Hooks are made of the finest quality wire—BETTER than ever before—produced for our exclusive use. Hooks hold with firm, sure grip—give longer satisfactory service.

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The Clipper No. 9 Portable Lacer laces belts up to 6 inches wide in one quick, easy operation. Under powerful pressure hook legs are embedded flush with the surface of the belt and points clinched, making a perfect joint. Phone your mill supply jobber for a demonstration!

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*Printers and Publishers*

of shrinkage to be expected, (2) what type of laundering is permissable, and (3) that the shrink-resistant label applies to foundation material and to all the trimmings of the garment as the basic fabric.

**Nylon Stockings Smuggled.** In the Aachen district of Germany, the smuggling of nylon stockings still continues. According to authorities, there has actually been an increase in the traffic in recent weeks. Whether the smuggling of stockings is a profitable occupation is not in doubt as the tariff which was introduced last year has raised the price of foreign nylon stockings in Germany considerably. Many foreign business men and speculators are said to be involved in the trade. The chief center of the trade is Frankfurt-am-Main. It is emphasized that few Germans are involved in the trade which is mostly in the hands of foreigners. Many nylons are being sent in trunks to an address where they are eventually picked up. Should a trunk be intercepted, the person involved usually states that it was incorrectly addressed and was sent abroad in error.

**German Textile Trade.** The condition of the German textile trade appears to be somewhat on the upgrade. During recent weeks there has been an increase of 12% in orders booked, which has created a general feeling of optimism.

## An Executive Views the News in Textiles

(*Continued from page* 95)

most of us would not understand exactly what they meant by it, but nobody has been honest enough in the Federal government to come out and say that.

This is only one of the questions about which they have fooled us for many years, and what this writer is looking for today is someone in national office who will stand up and speak his mind and tell the truth to the American people. Let him stand up and say frankly that all of this about the wealthy paying for "social gains" is a lot of hokum, and that if all of the salaries of above $5,000 were confiscated one hundred per cent that it would only run this government for a few months. The rest of it must come from the people who make less than $5,000 a year, and they are paying through the nose, and nobody in national office, apparently, has the courage and the honesty to tell them so.

For whatever they are worth, keep these thoughts in mind when you go to the polls on November 4.

## Spraying Is a Science at Star Woolen

(*Continued from page* 106)

a shut-off valve. Several different flat spray nozzles are used, depending on the capacity which any particular operator desires at any given time, and all are well within the range of the pump and meter capacity.

Here's how the machines are used at Star. Each of the several spraying machines are always at stand-by, loaded with different emulsions. When the specifications call for a particular emulsion, the spray operator wheels the portable sprayer to the blending pit where the stock is to be sandwiched prior to picking. The power cable is plugged into a convenient electrical outlet, the tank's contents are then agitated, and finally the operator opens the shut-off valve on the light-weight spray boom and maneuvers it over the stock.

The high pressure emulsion delivery assures maximum penetration of the stock in each layer of the sandwich. Uniform, fine mist dispersion of emulsion over a wide area of the layer results from the twin flat spray nozzles. Every fiber is coated with a protective film of oil, and better waste reclamation is achieved.

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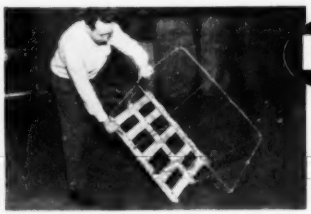

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THE LANE BASKET

W. T. LANE & BROS., INC. Poughkeepsie, New York

## Resist Robbery?

(*Continued from page* 169)

coal from a non-union mine. This happened on the eve of a movement by the United Mine Workers to bring 6000 union members into the community to over-awe 2000 miners in Clay and Leslie Counties who did not wish to become members of the union. This being an intolerable situation from the union standpoint, the 2000 were to be unionized by force.

*The Atlanta Constitution*: "Fights Flare as Strikes Tie up 10 IHC Plants." This dispatch describes how 25,000 International Harvester Company workers went on strike in three states, and how violence broke out at some of the struck plants. A fight in which baseball bats were reported used occurred at the plant in Louisville when non-strikers attempted to cross picket lines.

These are two typical samples of reports that can be picked out of the newspapers almost any week. When the members of a union riot and invade the Constitutional rights of other persons, they regard this as a legitimate union activity, but when some peaceable town resents the intrusion of inciters to riot sent there by a union, this is a dreadful invasion of the fundamental rights of the union organizers.

All of these cases mentioned are of profound interest to the entire textile industry. They represent the attempted invasion of fundamental rights which the American people had always believed that they inviolably possessed. The right to own, use, and dispose of property seems to us to be as basic and unchangeable in a free country as any right could possibly be.

Communists and other varieties of socialists deny this right, and contend that property can only be held, used, and disposed of in accordance with some vague thing known as the public interest, and of course some stacked government board always decides what the public interest is.

While we do not believe that the Mount Hope and E-Z mills cases can be made to stand up in court, they show clearly the line of development of the predatory policies of some labor unions. If these decisions do stand up in court, we feel that Congress will probably repeal any laws under which courts could confirm any such inequitable rulings of a government board.

Industrial unionism of this type is revolutionary socialism, and there is no use to pretend that it is anything else. Each year the additional encroachments of some of the powerful labor unions show more and more clearly the socialistic pattern of their plans. The industrial type of unionism often seeks control of the property of the employers of the unionists.

The paramount issue in practically all of the big strikes fomented by these socialistic unions has been:

"Shall property be managed by its lawful owners or by the people those owners have hired to work for them?"

## Reduce Paraffin Variation in Winding

When paraffin is applied from cakes to yarn being wound on Universal "Roto-Coners," one difficulty encountered is a variation between the amount applied when the cake is new and when it is almost used up.

This variation can be greatly decreased by starting with two cakes on the cake holder and then when the bottom cake wears away always place another cake on the holder. This will always leave one full cake plus at least a portion of another cake.

The thickness of the paraffin cakes specified for use on the paraffin attachment is 11/16 in. The cake holder is long enough to hold two of these cakes.

How this can make a difference in the variation in the amount of paraffin applied to the yarn may be seen by considering the following:

The weight of one cake is approximately 250 grains. So, if one cake is used and allowed to wear away, it will result in a ratio of variation of 250 to 0. But when the two cake method is used, the variation ratio is only 500 to 250 or 2 to 1.


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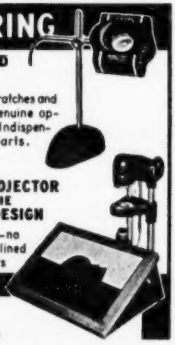

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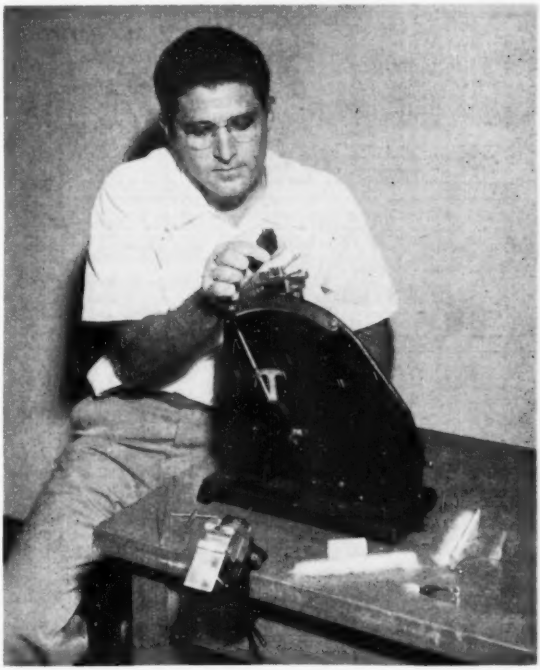
## New Tester Helps in Choosing Cotton Fibers to Get Fabrics That Wear Well

A new instrument for measuring both tensile strength and elongation of small tufts of cotton fibers has been developed by the University of Tennessee Fiber Research Laboratory in Knoxville, under a research contract sponsored by the U. S. Department of Agriculture.

A small tuft of fibers is gripped between two pairs of specially designed jaws spaced a short distance apart. By a pendulum-type mechanism an increasing load is applied to one pair of jaws until the fibers break.

Dr. G. E. Hilbert, chief of the Bureau of Agricultural and Industrial Chemistry which supervised the contract through its Southern Regional Research Laboratory in New Orleans, said that cotton buyers and breeders can use this instrument to get more accurate information on fiber properties that most affect the wearing qualities of cotton fabrics.

The new tensile tester, called the Stelometer (from STrength-ELongation-METER), has the advantage over previous fiber testers of measuring both tensile strength and the elongation or stretch obtained prior to break. Since fiber elongation is an important factor in the ability of fabrics to stand hard wear, the tester should prove valuable in selecting cottons especially suited to this use.



The Stelometer also features improvements in speed of operation and accuracy of results.

Dr. Kenneth L. Hertel, director of the Fiber Research Laboratory and head of the Physics Department at the University of Tennessee, terms the new instrument "as significant to the cotton industry as the earlier development of the Fibrograph and the Arealometer."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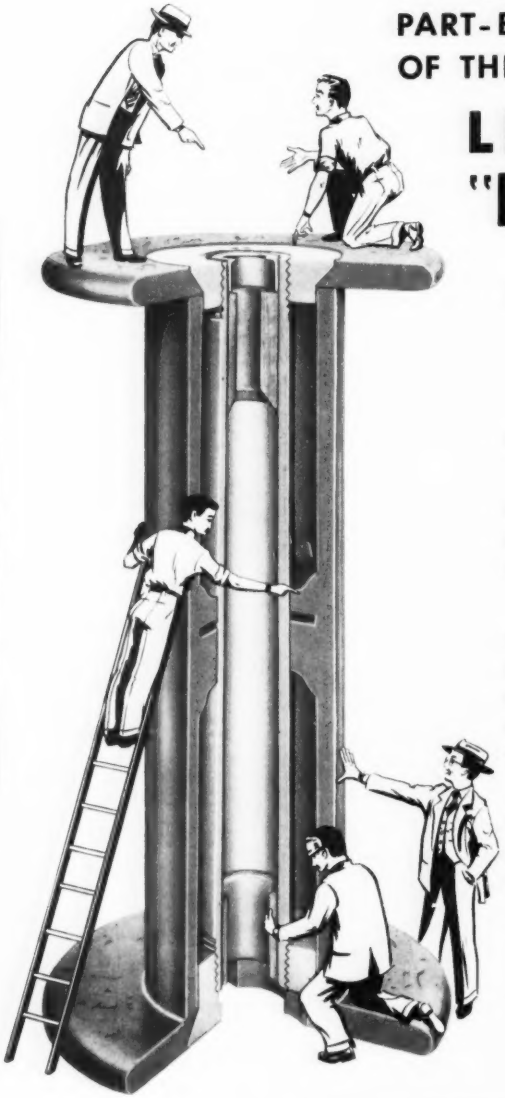

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**All parts are manufactured of stable materials, and to close concentric tolerances. As a result, when assembled, the new "NB" Bobbin is actually *in dynamic balance*, thus saving dynamic balancing costs.**

***Let us show you how much stronger it is throughout*** **because the aluminum center tube and beveled bushing give the necessary support to all parts of the bobbin, providing the safety factor required for the high tenacity yarns on the market today—and that will be on the market tomorrow.**

***Let us show you how parts are replaceable*** **when worn, or when there is some change in bobbin use; how special "Phenolite" (laminated bakelite) bushings maintain dimensional stability when steamed; and many other unique features.**

●

*Send for sample "NB" Bobbin, and see for yourself how it's different; how it's better; how it can save you money.*

## LESTERSHIRE SPOOL & MFG. CO.

*Specialists in the production of bobbins to meet individual requirements*

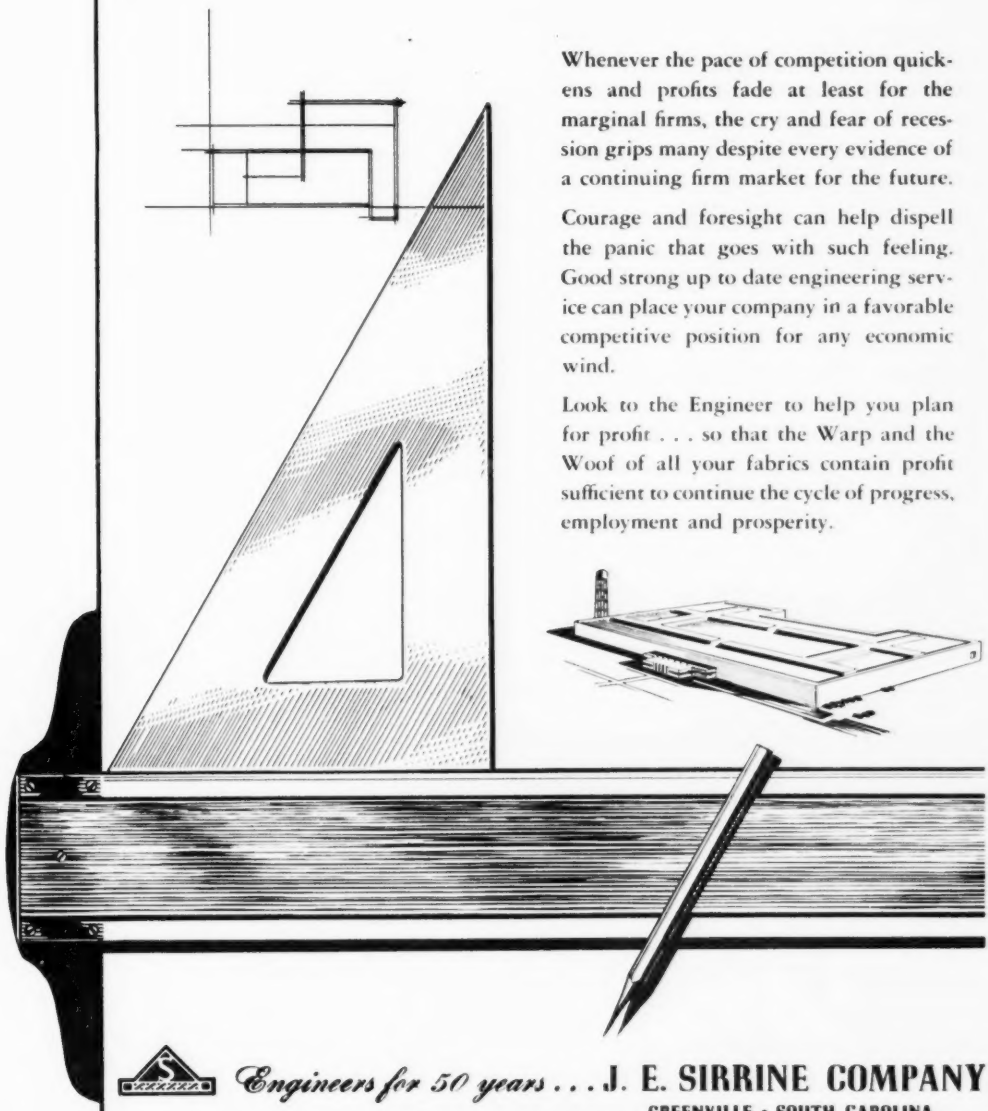
140 Baldwin Street — Johnson City, N. Y.

DIVISION OF NATIONAL VULCANIZED FIBRE CO.

Branch Offices and Technical Service: Clifford E. Lathrop—7 Whitney Avenue, New Haven 10, Conn. • Odell Mill Supply Co.—Greensboro, N. C. • W. H. Hobbs—Room 833, 30 Church St., New York 7, N. Y. • Greenville Textile Supply Co., Greenville, S. C.

*Pat. No. 2048994—Further patents applied for.

# BLUEPRINT FOR PROFIT



Whenever the pace of competition quickens and profits fade at least for the marginal firms, the cry and fear of recession grips many despite every evidence of a continuing firm market for the future.

Courage and foresight can help dispell the panic that goes with such feeling. Good strong up to date engineering service can place your company in a favorable competitive position for any economic wind.

Look to the Engineer to help you plan for profit . . . so that the Warp and the Woof of all your fabrics contain profit sufficient to continue the cycle of progress, employment and prosperity.

*Engineers for 50 years . . .* **J. E. SIRRINE COMPANY**

GREENVILLE • SOUTH CAROLINA

A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING BUSINESS, COMMERCE AND INDUSTRY

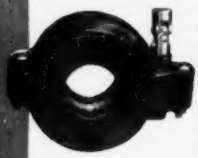
# V-R is 1st Again

## in Advancement of 2-3 Pick and Hank

# COUNTER DESIGN

For 30 years, Veeder-Root has scored the important "firsts" in advancement of counter design . . . studying the needs of mill men and giving *them* what they need. Now here again is a V-R "first" which offers additional new features:

- EASIER TO READ, reset and maintain.
- SHEAR-PIN TYPE OF PROTECTION built into reset knob.
- 4th UNIT CAN BE ADDED for use as 4th-shift counter or as totalizer.
- BRASS BEARINGS on horizontal shafts.
- BRONZE OILITE BEARINGS on vertical drive shafts.



NEW PLASTIC CONNECTION (at left) . . . cuts installation time, maintenance costs . . . resists humidity, wear, vibration.

Yes, here again is V-R Value, and in fuller measure than ever before. See your nearest Veeder-Root office . . . *and see us at the Show!*

**VEEDER-ROOT INC.**
HARTFORD 2, CONN.

## Welcome to BOOTH 107 at the Show . . . and visit our New Building

**—an easy 6-mile drive from Textile Hall, straight out Route 29 on Greenville-Spartanburg Highway.**